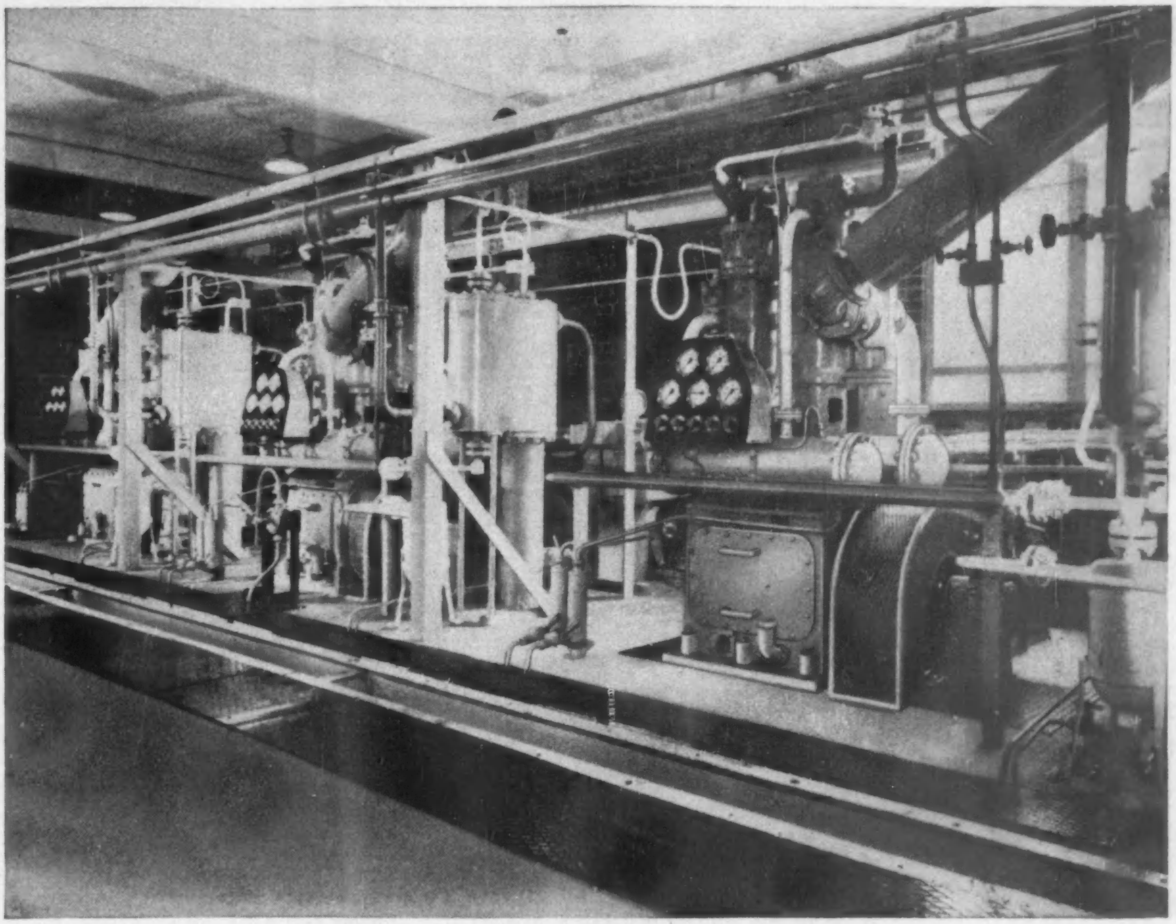
Chemical Age



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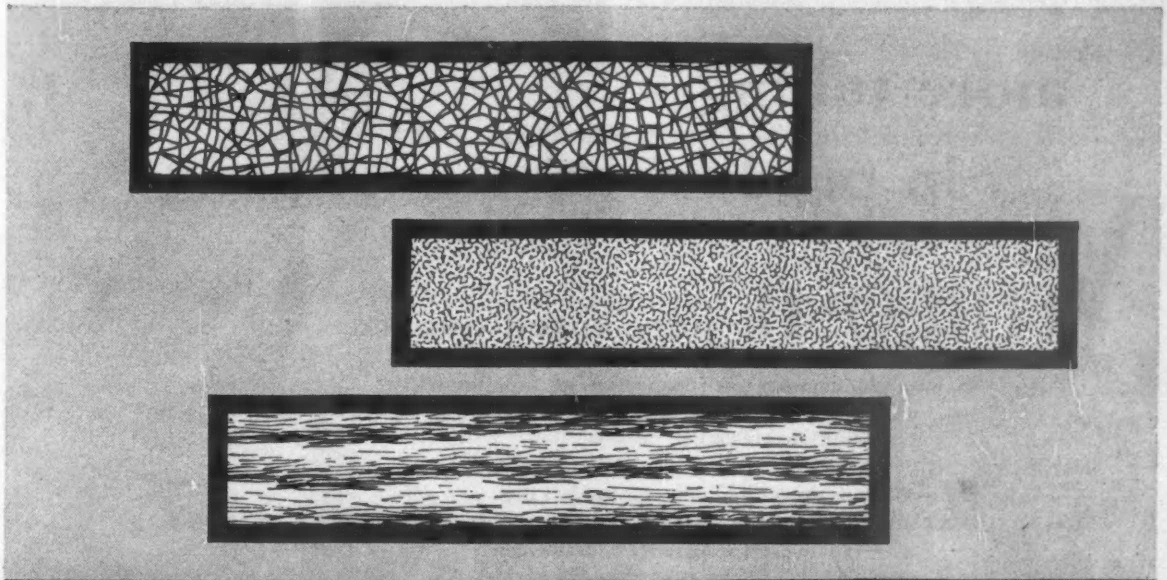

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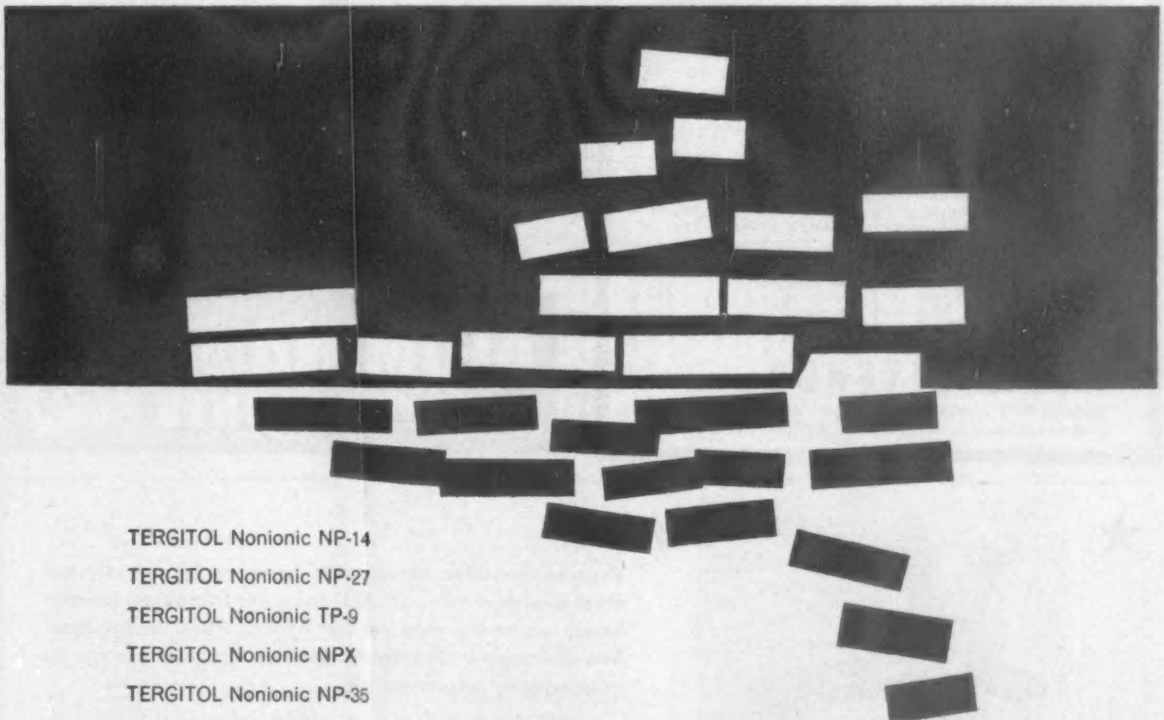

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CHEMICAL AGE

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BOOSTING SULPHUR USAGE

THE sulphur pendulum has swung full circle in the past 10 years. It was in 1951 that the Sulphur Exploration Syndicate was formed by 13 leading U.K. sulphur consumers with the aim of finding new sources; now in 1961 the newly formed Sulphur Institute, set up by the leading U.S. sulphur producers, is seeking new markets for sulphur in a world dominated by oversupply. The former sulphur syndicate is now the British Sulphur Corporation, whose main work now lies in publications, market research, and the collection of information on raw materials and relative technical developments on an international basis.

World sulphur production has been mounting rapidly. Recovery from natural gas and refinery off-gas at the 80-85 units throughout the world that recover elemental sulphur from sour gas, is expanding at a rate of more than 33% a year, but world sulphur consumption is expected to continue its growth at annual rate of 4% per year. Already the Lacq natural gas fields are producing vast quantities of sulphur, while, with four new recovery plants either planned or under construction in Alberta, Canada will soon have mounting stockpiles of sulphur.

By 1965, the Canadian Department of Mines and Technical Surveys estimates that sulphur production from natural gas will be between 3 and 4 million short tons a year. Total consumption in Canada in 1959 was only 1.05 million short tons. Canadian consumption of elemental sulphur in 1959 has been put at about 500,000 short tons; the U.S. figure was around 5 million tons, while total world trade, excluding that from Mexico to the U.S. is about 2½ million short tons.

This then is part of the background to the formation of the Sulphur Institute, which now has a London office. Its main objects are to stimulate and support research work aimed at finding new uses and expanding existing markets; to interpret and publicise research findings and to act as a clearing house on technical and other information on sulphur usage; to help develop a concerted programme for disseminating research findings and encourage their acceptance by world industry and agriculture.

The institute does not itself carry out research work, but has been making an intensive study of the many university and other research centres throughout the world where work on the chemistry of sulphur is being conducted. The aim is to co-ordinate such work wherever possible with a view to helping the promotion of new applications. The institute also sponsors some research programmes with research organisations, such as Battelle, who have been asked to consider various proposals to promote the use of sulphur in the plastics field.

Outlets in the building industry are under study and it is felt that there is scope for the use of sulphur in the preparation of cements. Some preliminary work has been done in France. A further outlet is seen in road-making, using sulphur in mixtures with bitumastic materials, giving certain advantages which could well lead to better surfaces.

Since one-third of world sulphur production goes to agriculture, this aspect is receiving much attention by the institute. It is felt that there is scope for encouraging greater usage of sulphur in fertilisers and in

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NEW IMPORT DUTY LINE-UP FOR MANY MAJOR CHEMICALS

A NUMBER of important chemicals including pyridine, phthalic anhydride, sulphamic acid and anti-knock compounds, are affected by the Import Duties (Temporary Exemptions) (No. 3) Order, 1961, which has been made by the Treasury. The first schedule to the Order provides for the exemption from import duty of a range of organic chemicals from 1 April 1961 to 1 October 1961. Included are: catalysts, containing silver dispersed with alumina, or with alumina and silica, or with aluminium silicate, and which contain not less than 5% by weight nor more than 20% by weight of silver. Also included in this schedule is polyurethane yarn "capable of being stretched to at least five times its original length without breaking and with instantaneous recovery to not more than 1¼ times its original length on release after tension." With exemption granted only until 1 August 1961 are mixed alkyl mercaptans, "of which not less than 90% by volume distils between 260 and 290°C at normal pressure."

The second schedule provides for the continued exemption of certain goods which are at present temporarily exempt from import duty. These, with exemption until 1 October except where otherwise shown, include: sulphamic acid; phosphorus pentasulphide and aluminium oxide of a certain description; dihydrocarveyl propionate; vinyl stearate; oxalic acid (until 1 June); phthalic anhydride (1 June); *iso*propylamine; acetone cyanohydrin containing not more than 0.1% by weight of free hydrogen cyanide (until 1 June); pyridine; and anti-knock preparations.

The third schedule to the Order revises the description of certain goods included in the second schedule: for instance, "oxalic acid" is amended to read "oxalic acid containing by weight not less than 10 p.p.m. of iron calculated as Fe and not less than 10 p.p.m. of heavy metals calculated as Pb"; while the previous description of anti-knock preparations is changed to: "anti-knock preparations, containing not less than 45% by weight and not more than 65% by weight of tetramethyl lead."

New Plants and Extensions Reviewed in A. and W. Annual Report

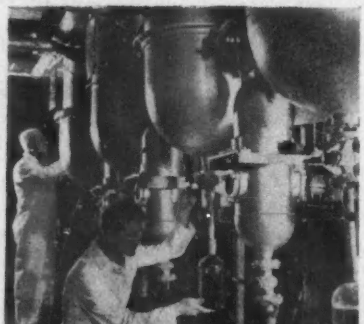
SEVERAL new plants and extensions to existing plants were completed in 1960, according to the annual report of Albright and Wilson Ltd. These plants include extended capacity for a wider range of oil additives, a new plant for metal treatment solutions and an extension to the carbon tetrachloride plant.

Speaking of the merger with Boake Roberts, the chairman said that the greater capital resources of the group will make it easier for them to take advantage of opportunities for development. Several projects have been authorised since the merger, including a further plant to make epoxidised oils and esters. Additional fractionating stills have been approved for Stratford and Rainham works which will substantially raise the capacity for perfumery chemicals, both those obtained from conventional sources and those made by synthetic processes.

Work has continued at Whitehaven on the extension of the sulphuric acid and cement making capacity of Solway Chemicals. Authorisation has been given for an extension of Marchon Products phosphoric acid plant, which will absorb most of the increased output of sulphuric acid. The new plants are planned to be completed before the end of this year.

The growth in the demand for silicones is expected to continue and accordingly work has started on several new plants, with others at the planning stage, which are designed to give Midland Silicones the capacity to satisfy the demand for several years to come.

Included in the annual report is a current review of A. Boake, Roberts and Co. (Holdings) Ltd. Abrac are Britain's foremost suppliers of plasticisers which form the bulk of the company's output. At the Rainham factory there is one of the world's largest and most efficient plants for the production of organic phosphate from phosphorus by A. and W. (Mfg.) Ltd. at Oldbury. This particular group of plasticisers has excellent fire-retardant properties and show general economy in plastics processing.



Vacuum distillation of perfumery and flavouring materials at Abrac's Stratford works

Common Market Entry for Fisons With Compound Fertiliser Unit

FIRST major step towards establishing Fisons as important producers in the Common Market has been taken with the formation of a joint fertiliser manufacturing company by Fisons Fertilizers Ltd. and Union Chimique Belge, Brussels.

Known as Fison U.C.B., S.A., the company will set up plant at Zandvoorde, near Ostend, with production of high-analysis granular compound fertilisers planned to start by mid-1962. The plant will be one of the most advanced in Europe, initially capable of a production rate of 20 tons per hour, and using a new production process now under development by Fisons.

Cost of the plant, to be built on their existing site, by U.C.B. to Fisons design, is £1.5 million. Fisons will supply all know-how, while raw materials will come from U.C.B. The new company will have a £750,000 capital, owned on a 50-50 basis.

In addition to selling in Belgium and other Common Market countries, Fison U.C.B. will export fertilisers to overseas territories.

Stock Losses, Plant Delays Hit Reichhold Profits

FOR the first six months of 1960, sales and profits of Reichhold Chemicals Ltd. were up on 1959 results, but during the last six months, however, trading conditions became difficult and it was not possible to maintain either turnover or profit margins. A break in the price of raw materials involved the company in stock losses of some £45,000; in addition delays in plant delivery mean that the new Vinatex factory will not be in economic production before May next, many months later than anticipated.

The directors do not expect the results for 1961 to be affected as adversely as for the last six months of 1960. Overall 1960 profits were down on the previous year, as shown in 'Commercial News',

Sulphur Usage

(*Continued from page 575*)

specialised uses, to bring down the pH in very alkaline soils, etc. Literature searches have revealed that there is a greater sulphur deficiency than might be thought, while work in Senegal has demonstrated that there is a sulphur deficiency in groundnuts grown there.

The task of developing new uses and extending existing markets is tremendous and the institute's executives are faced with mounting surpluses throughout the world over the next few years. It is too early to say whether the new Sulphur Institute will be successful in its attempt to boost consumption, but it is certainly tackling the problems with much skill and energy.

Project News

Esso Award Ethylene Pipeline Contract to C.J.B.

CONTRACT for the construction of the ethylene pipeline from the Fawley refinery of Esso Petroleum Co. Ltd. to the I.C.I. Severnside site has been awarded to **Constructors John Brown Ltd.'s** Pipeline Division. Cost of the pipeline, including compensation to those whose property it will cross, is estimated at £850,000. Construction is expected to begin shortly and to be completed this year.

The pipeline, consisting of 6 in. diameter steel line pipe will extend for 76 miles. The entire line, weighing 2,700 tons, will be made of solid drawn steel pipe manufactured by Stewarts and Lloyds Ltd.

The pipeline will supply ethylene to the I.C.I. ethylene oxide plant now under construction on Severnside. This plant will make 35,000 tons/year ethylene oxide, ethylene glycol and associated products and is due on stream early in 1962. Ethylene oxide will be made by the air oxidation process developed by Scientific Design which is the most modern version of the S.D. process. Unit for ethylene glycol and associated products has been designed by the I.C.I. Heavy Organic Chemicals Division on their own process. All materials for both plants have been ordered by H.O.C. Division.

I.C.I. Contractors

Supervision of construction is being carried out by the Severnside works organisation on behalf of the division, with the aid of a number of contractors responsible for difference aspects of the work. These include George Wimpey and Co. Ltd. (civil engineering and mechanical erection), Stewarts and Lloyds Ltd. (pipework fabrication and erection), Hartons Installations Ltd. (instrument erection) and Scull Electrical Ltd. (electrical installation).

On site civil engineering is nearing completion and mechanical erection and piping have started. The work is substantially up to schedule.

Construction of the pipeline from Fawley is entirely the responsibility of Esso. There is some provision for storage at Severnside and arrangements will be made to move ethylene by road tanker if the pipeline cannot be completed by the time the plants are ready to start up.

To provide feedstock for the I.C.I. plant, Esso are now expanding their Fawley olefin units at a cost of some £5.5 million. It is thought that the new plant, contract for which has been awarded to Foster Wheeler Ltd., will almost double Esso's existing ethylene capacity of 40,000 tons a year. Esso have contracted to supply I.C.I. with 40,000 tons of ethylene a year.

Total U.K. capacity for ethylene in 1960 was 395,000 tons, which should rise to about 410,000 tons by 1962 and to 600,000 tons by 1965. U.K. capacity last year for ethylene oxide and glycol was 73,000 tons, due to top the 100,000 tons/year mark next year.

Main Contractors Named for Sidac Acid Recovery Unit

● A CONTRACT worth about £500,000 has been awarded to **Process Plant Contractors (Campbell) Ltd.,** Manchester, for the design, supply and construction of an acid recovery and storage plant for **British Sidac Ltd.,** cellulose film manufacturers, at their works at St. Helen's. This plant is an extension to their existing facilities and is scheduled for completion in 15 months. Process Plant Contractors, as main contractors, will execute this contract in collaboration with **William Neill and Son (St. Helen's) Ltd.,** who will supply the building tanks and vessels.

Grange Chemicals to Have First U.K. Facilities for Petro-phthalic

● ANOTHER major entrant to the U.K. phthalic anhydride field—the first to use an *o*-xylene feedstock—will be **Grange Chemicals Ltd.,** a subsidiary of British Hydrocarbon Chemicals Ltd., in whom a third interest is held by California Chemicals (a subsidiary of Standard Oil of California). On Wednesday Grange announced that they were actively developing plans for the erection of a plant to make about 15,000 tons/year of phthalic. No statement has been made about site, but this could be Baglan Bay, the new South Wales petrochemical site of B.H.C.

o-Xylene feedstock will be produced by B.P. California (a British Petroleum-California Chemicals company) at a new plant that is being built at the B.P. Isle of Grain refinery.

This is a new venture for Grange Chemicals who operate a plant at Grangemouth where some 15,000 tons/year of dodecyl benzene are produced for sale under the trade name Grange Alkane.

Last year, U.K. production of phthalic totalled some 76 million lb., while rated capacity has been estimated at 110 million lb. Producers in this country are I.C.I. Wilton Works (where a Kellogg-built fluid-bed process is used); South Western Tar Distillers Ltd. (3,000 tons/year plant using Saint-Gobain process); United Coke and Chemicals Ltd. (who use their own fluid-bed process, which they have now licensed to Foster Wheeler Ltd.); Howards and Sons Ltd. (where a second unit recently came into production boosting capacity to 6,000 tons/year); Reichhold Chemicals Ltd., (who completed plant extensions at the end of 1959); Monsanto (who have a 7,000 tons/year S.D. plant). British Celanese, former phthalic producers, are currently carrying out large-scale trials with a fluid-bed process developed by the Coal Tar Research Association.

In 1960, 17,900 tons of phthalic anhydride went for the production of phthalate plasticisers; with 15,500 tons for alkyd resins; and 2,300 tons for polyester resins.

Fisons Leith Fertiliser Project Gets Go-ahead

● FISONS LTD. have received Dean of Guild approval for their £220,000 fertiliser store and manufacturing plant at Imperial Docks, Leith. Work will begin shortly and should be completed by May 1962 on both the new fertiliser manufacturing, bagging and storage block and also on a two-storey office block which will also be located there. The plant will have the most modern mechanical handling, bagging and storage equipment and will be designed for fast smooth handling of bagged fertilisers. It will replace the firm's existing plant at Timber Bush, Leith, when completed.

Second Stretford Process Order for Dempster

● ORDER for a Stretford sulphur extraction process plant has been received by **R. and J. Dempster Ltd.,** Manchester, from the **Eastern Gas Board.** The plant, to be installed at the Norwich gasworks, will treat 4 million cu. ft./day of gas.

This follows a previous order received by Dempster for a similar plant, to treat 11 m. cu. ft./day, for installation at Antwerp (C.A., 25 February, p. 321), which was the first plant operating on this process to be ordered. Dempster are one of the licensees appointed for this process patented by the North Western Gas Board and Clayton Aniline Co.

Uganda Fertiliser Contract for Simon-Carves

● A SULPHURIC acid unit and a single superphosphate plant are to be supplied by **Simon-Carves Ltd.,** a member of the Simon Engineering Group, as part of new fertiliser facilities to be built at Sukala, near Tororo for the Uganda Development Corporation.

Capacity of the acid plant will be 30 tons/day, while the superphosphate unit will have an estimated capacity of 25,000 tons/year.

A.D.P. Pigment Expansion at Dukinfield

● TO COPE with European demand for Acheson concentrated pigment dispersion in thermoplastic resins a 35,000 sq. ft. extension has been added to the **Acheson Dispersed Pigments Co.** works at Dukinfield, Cheshire, as stated in CHEMICAL AGE, 25 March, p. 503. The additional space is devoted mainly to expansion of manufacturing and warehous facilities; an extension of the general offices has also been provided. The overall Dukinfield

development programme has been going on continuously for over two years, in which time contractors have never left the site. Acheson Dispersed Pigments Co. affiliates of Philadelphia, operate three thermoplastics dispersion plants in the U.S.

Russians Visit Fisons' MCPA Plant

Following the announcement of a £1.35 m. contract for Wycon Services Ltd.—the joint Fisons-C.J.B. subsidiary—to design, supply and commission an MCPA plant for the U.S.S.R. (C.A., 18 March, p. 449), a delegation from Bashkiria, the area where the plant is to be erected, visited Fisons Pest Control Ltd. at Harston to discuss technical details with the staff of Fisons Pest Control responsible for the MCPA plant. Left to right: Mr. S. Dixon, technical officer, Fisons Pest Control; Mr. Agenson, chairman, Bashkiria Development Council; Mr. H. G. Haynes, senior organic chemist, Fisons Pest Control; Mr. Litvinenko, director, Institute of Chemical Technology and Mr. Masanev (U.S.S.R.)

I.C.I.'s £multi-million Tees Crude Oil Project

● PLANT capable of distilling about 1 million tons of crude oil a year is to be built by **I.C.I. Heavy Organic Chemicals Division** on a new 250-acre site on the north bank of the Tees. Crude oil will be taken from Shell Mex-B.P. The £multi-million plant is due on stream before the end of 1962. H.O.C. Division, which will build and operate the distillation plant has not previously handled crude oil in its petrochemical manufacturing operations.

The plant will consist essentially of distillation units designed to give flexibility in order to give a variety of materials for processing and to vary the end-products.

Light distillate (naphtha) will pro- Wilton olefin plants; other products will be marketed by Shell Mex-B.P. I.C.I. will build a jetty on the river frontage to handle crude oil and transport from the site of finished products.

Only part of the new site will be occupied by this new project, leaving ample room for storage and future developments. The existing pipeline system that links I.C.I.'s Wilton and Billingham works run alongside the new site so that the transfer the distillation plant products to either will be facilitated.

NEW NITRIC PLANT RAISES I.C.I. OUTPUT BY 15,000 T.P.A.

AN increase in annual capacity of 15,000 tons of 100% nitric acid is the outcome of the new I.C.I. Nobel Division's plant at Ardeer based on the intermediate pressure oxidation of ammonia. The new plant, which has a rated capacity of 55,000 tons a year, is designed to replace three older units with a total capacity of approximately 40,000 tons.

As reported in CHEMICAL AGE last week, the new plant has been operating entirely satisfactorily since its commissioning in mid-1960. All the Ardeer nitric acid is now being made by the intermediate pressure oxidation process.

The nitric acid produced is primarily employed in a number of nitration processes used in the manufacture of nitrocellulose and explosives.

The new plant is described in *Platinum Metals Review*, Vol. 5, No. 2, the journal of Johnson Matthey and Co. Ltd. It is designed by Stamicarbon N.V. and produces 60% nitric acid. The acid is concentrated by the use of magnesium nitrate (see CHEMICAL AGE, 16 June, 1960, p. 947).

The ammonia used in the process and brought from the Billingham Division works at Mossend, is filtered in the gas phase by glass wool filters before being mixed with air. Air for the process is water-washed in a Peabody scrubber and added to the ammonia to form a mixture containing up to 11.5% of ammonia by volume. The air and ammonia streams are individually preheated to 50-200°C before mixing. The gas mixture is further cleaned before entry into the converters by a series of three units containing a total of 3,000 ceramic candles. Homogeneity is ensured by a number of multi-nozzle mixers and the composition is continually checked by a Cambridge recording catherometer.

The ammonia : air ratio controlling system is fully automated. It is closely related to the catalyst gauze temperature which is also continuously measured by means of a radiation pyrometer.

The catalyst gauzes, woven on 0.06 mm. diameter rhodium-platinum alloy wire by Johnson Matthey, are placed in a pad of three in each convertor. A catalyst loading of 140 lb. of ammonia burnt per day per oz. troy of platinum alloy exposed is used.

Conversion efficiency exceeds 96% and an overall plant efficiency of 94% is usually attained. Platinum alloy losses are expected to be very low—about 50 mg. per ton of nitric acid.

An outstanding feature of the new plant is its very low requirement for operating labour. All flow rates, pressures and temperatures are automatically measured, recorded and controlled, and an elaborate system of safety devices ensures that the plant shuts down automatically and rapidly in the event of an impending disaster. The gas cleaning system and the very low loss rate of catalyst allow long, continuous operating runs of over three months.

New Still Boosts Efficiency, Output at Port Sunlight Glycerine Refinery

OUTPUT and efficiency of the U.K.'s biggest glycerine refinery—that of Lever Brothers at Port Sunlight—have been increased by the installation of a new still developed by Lever's own engineers. Made of stainless steel, it is superseding four Ruymbeke stills which have been operating for 40-50 years. The new still is not only considerably more compact, but also has an hourly output higher than the combined output of the four older stills.

Moreover, the new still is able to produce chemically pure glycerine in one distillation—production of glycerine of this quality in the Ruymbeke stills required firstly a distillation from the crude glycerine to technical grade, then a further distillation of this material to give the chemically pure quality. Thus, with the new still, time, labour and steam costs are reduced by over 50%.

At the Port Sunlight refinery, crude glycerine, with a glycerine concentration of 82%, is steam-distilled under vacuum, bleached, and made ready for sale as either industrial grades or chemically pure glycerine. Output of refined glycerine is 1½ tons/hr., the refinery being worked continuously on a three-shift system, with two men on each shift.

Use of stainless steel for the new equipment means less risk of metallic contamination, and an instrumentation system that can be set for the quality desired provides better control. Good visual observation is obtainable throughout the distillation process. The contents of the still are circulated at the rate of 1,000 gall., or 5 tons, a minute, being heated by steam at 350 lb. pressure. Compact steam ejectors replace big reciprocating pumps previously used to raise the vacuum and operating pressures are very much reduced, with consequent improvement in efficiency.

According to the Lever publication, *Port Sunlight News*, in which the new installation is described, it may be necessary to install a further, similar still in the near future, to give the refinery a total of three high vacuum stills.

F.B.R.A.M. Move

The Federation of British Rubber and Allied Manufacturers has moved its offices to 19/20 Berners Street, London W.1. The telephone numbers, Museum 2671 and 0268, remain unchanged.

Borax Prices to be Maintained Despite Freight Increase

DESPITE a further rise in ocean freight prices from 1 April, Borax Consolidated Ltd., Borax House, Carlisle Place, London S.W.1, intend to hold present prices as long as possible. This increase in freights was indicated in January when both Borax Consolidated and Borax and Chemicals Ltd. increased their prices of borax and boric acid by 10s a ton from 1 February.

At that time the companies had been successful in getting the freight increase temporarily reduced from the level proposed; the shipping companies then agreed to defer implementing the full rise until the end of March, when they said the situation would be reviewed. The borax companies have not been able to get this deferred part of the freight increase cancelled out.

Effect of the freight rate now established is to create a steep differential for rates from the U.S. Pacific coast to U.K. ports in comparison with shipment to the Continent. Labour problems in U.K. ports and a longer turn-round are said to add to the costs of shipping to this country.

The 1 February price schedules for borax and boric will continue in force until further notice.

Finnish Chemical Men on U.K. Visit

REPRESENTATIVES of the Association of British Chemical Manufacturers, the British Chemical Plant Manufacturers Association, the U.K. chemical industry, trade unionists and Government officials attended a reception held by the Government recently in honour of a mission from the Finnish chemical industry.

Mr. Frederick Erroll, Minister of State, Board of Trade, was host at the reception which took place in the Royal Wine Cellar, Horse Guards Avenue, London. Present from Finland were: Dr. J. Larinkari, Mr. Olli Ollila, Professor G. A. Nyman, Professor Olavi Harva, Mr. Runar Ornhjelm, Mr. Mikko Tanner, Mr. T. Pölhö, Mr. Jussi Karineva, Mr. Mikko Sawo, Mr. R. Korte and Mr. V. Tammela.

Letter to the Editor

Ministry Approval for Fluoroacetamide

SIR,—We have to inform you that fluoroacetamide compositions are now officially approved by the Ministry of Agriculture under their Approval Scheme, for use, not only on sugar beet but also against *brevicoryne brassicae L.* (mealy aphid) on cabbage, cauliflower, kale and brussels sprouts. Approval came too late for inclusion in the official Ministry 1961 Approvals list.

Yours, etc.,

M. A. PHILLIPS.

M. A. Phillips and Associates Limited.
Romford, Essex.

Crosfield Have Development Catalysts for Fatty Acids, Liquid-phase Hydrogenation

NICAT NP/K.50, a non-pyrophoric nickel catalyst, supported on kieselguhr, is now available in tonnage quantities from Joseph Crosfield and Sons Ltd., Warrington, for the hardening of glyceride oils and fatty acids. This and many other development products are featured in the second of a series of booklets on development materials now available from Crosfield. Data sheets, price lists, samples, and in many cases, progress reports giving details of performance in particular applications are available.

Nicat NP/AC.60, a non-pyrophoric nickel catalyst supported on silica, is available for the liquid-phase hydrogenation of unsaturated organic liquids involving ethylenic, acetylenic, aromatic or heterocyclic double bonds; also the reduction of ketonic, nitrile, nitro, nitroso, oxime and similar groups. This catalyst is particularly suitable for reactions involving feedstocks with sulphorous impurities such as the cresols; glyceride oils and unsaturated fatty acids can also be efficiently hardened (5-cwt. quantities, packed in 56 lb. drums, or lesser quantities in 1 lb. and 10 lb. tins).

A tableted form of this product is available in up to 1-cwt. lots for vapour-phase continuous hydrogenation over a fixed-bed catalyst, for the reactions mentioned above. Nicat NP/M.38, a non-pyrophoric nickel catalyst supported on a refractory base, is available in 100-lb. lots, for use as a preactivated methanation catalyst in the removal of carbon monoxide from hydrogen by conversion to methane.

Sorbsil M.60, aromatic adsorption grade silica gel (up to 5 cwt.), is for the separation of aromatics from aliphatic and naphthenic hydrocarbons and complies with the A.C.S. toluene adsorption test for the separation of toluene from n-heptane.

Among other products are Pyramid NK (sodium potassium silicate) and Isopropyl silicate P (isopropyl orthosilicate and isopropyl polysilicate) for use as binders in castings; Gasil 23 (aerogel), Gasil 64, 93 and 200 (all micronised silica gel) for use as flatting agents in surface coating materials; Gasil 35 (micronised silica gel) an encapsulating agent in duplication paper; Microcal 210 and 160 (calcium silicate) and Alusil 165 (aluminium silicate), white reinforcing fillers for rubber compositions and Neosyl (precipitated silica) for the matting of gloss paints, etc.

Growth of Modern Detergents is Subject of R.I.C. Popular Lecture

THE story of soap and the growth of modern detergents was the subject of a lecture delivered by Dr. K. A. G. Pankhurst, Head of the Adhesives Section of the Reed Paper Group at Hendon Technical College on 29 March.

This lecture was the second of a series of two public lectures sponsored by the Royal Institute of Chemistry, which are in the nature of an experiment. Such is the growth of science and its impact on daily life that more people, not directly connected with its growth, are becoming interested. These lectures are an attempt to meet this interest and show non-scientists the contribution which chemistry makes to everyday life.

Dr. Pankhurst began his lecture by quoting figures from CHEMICAL AGE (4 March, p. 360) which showed that the proportion of synthetic detergents to soap produced in the U.K. had increased, although the total had remained approximately the same. The present proportion of synthetic detergent production to the total is 40% in the U.K. The corresponding figure in the U.S. is 75%.

Later, in reply to a question, Dr. Pankhurst said that he did not think that soap will be entirely replaced by the synthetic products. There are several applications in which detergents do not yet meet the bill. For instance, a bar of detergent that can compare with a bar of soap in all respects, has not yet been produced.

After giving the position of synthetic detergents in the world today, Dr. Pankhurst traced the history of the development of soap—which was originally used for an adornment and not as a detergent —and showed how the study of the nature of soap led to the knowledge of the requirements of a synthetic product.

From the purely academic compounds produced by Reychler in 1913, which might be said to be the first attempt to produce soap-like compounds, has grown the wide variety of anionic, cationic and non-ionic detergents of today.

Rise in U.K. Chemical Plant Deliveries

U.K. DELIVERIES of chemical plant were valued at a provisional figure of £43.8 million in 1960, a £6.5 million rise on the 1959 figure of £37.3 million, but below the record year of 1958, when a total of £50.3 million was registered.

Fourth quarter 1960 deliveries of chemical plant totalled a provisional £13.9 million, compared with £11.3 million in the third quarter and £9.6 million in the fourth quarter of 1959.

At a time when industrial research and development is still overshrouded in secrecy it is refreshing to hear of a new approach from at least one company. Joseph Crosfield have now issued the second of their booklets on development products.

Their main object in issuing this series—at what will probably be six-monthly intervals—is a commendable attempt to bridge the gap between pilot plant production and the setting-up of larger manufacturing facilities, as well as to give the chemical and process industries the earliest possible news of Crosfield research. As development products are upgraded to regular production, or are withdrawn due to lack of interest, they will be omitted from the Crosfield development list and replaced by new chemicals.

Benefits of this policy are two-way. Crosfield help promote interest in their new materials and, possibly, enable them to reach the commercial production stage earlier than they might otherwise have done. Customers and potential customers get the advantage of being able to make a quicker assessment of new chemicals.

A busy period is ahead for Constructors John Brown Ltd., who have gained an interesting new contract—that of constructing the 76-mile Fawley to Severnside ethylene pipeline for Esso Petroleum. Recently they were awarded the contract to double to 22,000 tons/year I.C.I.'s polypropylene plant at Wilton and last month added to their Soviet work by gaining in conjunction with Fisons contracts for the design, engineering and commissioning of plants for MCPA and dimethylol ethyleneurea.

Another major scheme announced this week is the projected entry into petroleum phthalic by Grange Chemicals, the British Hydrocarbon Chemicals subsidiary. U.K. phthalic production last year totalled some 34,000 tons, while capacity was rated at some 49,000 tons; this discrepancy between output and capacity is explained by the fact that some plants are not working too well and to the shortage of naphthalene.

The only native of oil-rich Aden to qualify as a chemical engineer was among four students from Aden who were guests of honour at a luncheon given by the Commonwealth Technical Training Week in London on 6 April. Abdul Rehfan Yusuf, aged 29, gained his B.Sc. at London University and is now on a post-graduate course in the engineering design office of Daniel Adamson and Co. Ltd., Dukinfield, near Ashton-under-Lyne, Lancs. The firm makes plant for the petroleum and chemical industries.

The idea of a Commonwealth-wide training week was started by the Duke of Edinburgh after seeing the success of a similar scheme in Australia. Aim of the week is to stress the importance of vocational training for young people, whatever job they are going into.

The Duke of Edinburgh is to devote all his time to supporting Britain's part in the world-wide event, starting with an inauguration ceremony at London's Guildhall on 29 May. Industry and educational bodies throughout the Commonwealth will hold exhibitions, open days, parades and other celebrations during their training week.

Recent suggestion that Czechoslovakia would continue to import Teflon polytetrafluoroethylene until 1964, when local production was scheduled, has caught Du Pont on a raw spot. *Chemical Week*, our U.S. contemporary, has been told in a 'letter to the editor' that the implication that Du Pont have either directly or indirectly sold fluorocarbon resins to Czech customers "is not in accordance with the facts".

Teflon resins are considered strategic materials by the U.S. Government, as well as in other manufacturing countries, and are therefore subject to rigid export controls. Since Du Pont are fairly certain that no U.S. exports or re-exports have been reaching Czechoslovakia, it would be interesting to learn the source of origin of these p.t.f.e. resins.

The need for a company to maintain close contact with consumers in order that no potential use of a product lacks consideration is well illustrated by the development of the new anthelmintic—Promintic—now being marketed by I.C.I.

The active ingredient of Promintic is 2-β-methoxyethylpyridine—the latest addition to the Midland Tar Distillers range of products. This compound was one of a number of new substances prepared in the research department at Four Ashes and sent for examination for biological activity to the laboratories of the Pharmaceutical Division of I.C.I.

Experiments soon showed that 2-β-methoxyethylpyridine had a remarkable activity against worms. Accordingly further quantities of the compound were prepared and tests continued on mice which had been deliberately infected. The results of these experiments confirmed the original findings.

The scale of the experiments carried out by I.C.I. was increased and larger quantities of the compound were prepared in the special products laboratory of M.T.D. using a more efficient method of preparation developed in the research department. At this stage I.C.I. sought the co-operation of veterinary surgeons, and eventually the drug passed all the trials.

A plant has been erected at Four Ashes and 2-β-methoxyethylpyridine is now being made on a large scale.

This is a success story of a medicinal product developed by the co-operation of two firms to the advantage of both; but such is the uncertainty of the development of this type of compound that there are many more, on which a great deal of effort is expended, which never become accepted.

Foggy windshields, according to U.S. car manufacturers, are caused by volatisation of plasticiser from overheated vinyl upholstery in cars. One producer, however, disagrees. Of two cars tested, one with upholstery and one without, both windshields fogged. The car without upholstery had an acrylic-type lacquer on the dashboard which contained a small amount of volatile component which caused the fogging.

Evidently the problem has grown to such proportions that, last year, Ford Motors told suppliers that they would only use non-fogging vinyls. Similar specifications are being laid down by General Motors Corporation.

The continual troubles of the Sicilian sulphur industry have prompted more than one critic to opine that helping the industry is tantamount to throwing good money after bad and that the best thing would be to close sulphur mines and to use State grants to provide jobs for displaced miners.

A different idea is put forward by Prof. Tucci, who at a recent congress on sulphur organised in Palermo by E.Z.I., expressed the view that, while no amount of technical improvements at the mines will bring down the cost of Sicilian sulphur to a point where it can compete in the world market, it would be feasible to install plants capable of utilising local sulphur, alone or with other indigenous products, to produce chemicals of the kind that could be marketed without difficulty.

One objection to Prof. Tucci's proposal is that it is questionable whether it is worth while to invest capital in plants relying on Sicilian sulphur, the reserves of which are calculated to last only for another 20 years at the most. Unless once, her own reserves are exhausted, Sicily could economically import sulphur for such plants. It will be interesting to see what other Italian specialists have to say on this subject.

Alembic

ORGANIC INTERMEDIATES IN THE 1960's

Aliphatics Boom to Meet Call for Plastics, Man-made Fibre, Rubber

ALIPHATIC intermediates, the demand for which has increased with the rapid growth of the newer industries of plastics, synthetic fibres and rubbers and detergents, were the subject of a paper by J. Starr, I.C.I., Heavy Organic Chemicals Division, at the Manchester symposium on 'Organic Intermediates in the 1960s' (see also CHEMICAL AGE, 1 April, p. 543).

As an example of the rapidity with which these industries have grown, U.S. production of plastics has roughly trebled between 1948 and 1958 and in the U.K. it has doubled over the period 1954 to 1960. The U.K. production of polythene and p.v.c. in 1960 is estimated at between 105,000 and 110,000 tons each which is nearly two-thirds of the total U.K. production of thermoplastics in general and 40% of the total of all plastics.

New Plastics Materials

In addition to the well established plastics, there are many materials at early stages of growth—polytetrafluoroethylene, acrylates, polyformaldehyde, polyacrolein and polycarbonates. Particularly striking is isotactic polypropylene which many people believe may become even more important than polythene in the long run.

Basic Building Blocks. Olefins are the most important building blocks for aliphatic intermediates, with ethylene heading the list. The production of this chemical has risen steeply.

There is a marked divergence between the U.S. and European practice in the manufacture of olefins, resulting largely from the differences in the pattern of demand for refinery products and refinery techniques. The manufacture of ethylene from acetylene, by the dehydration of alcohol or by extraction from coke oven gas has been largely superseded by its recovery from refinery gases and especially by the deliberate cracking of various hydrocarbon feedstocks. The U.K. was the earliest in the field with the extremely rapid development from 1950 onwards with the cracking of naphtha for high yields of olefins. At present over 95% of U.K. ethylene capacity is naphtha based.

Looking ahead, it can be seen that the growth in demand for ethylene relative to propylene is tending to slacken and C_4 olefins are going through a period of rapid expansion.

Following the pioneering work of the Gas Council on the bulk importation of methane, propane and butane into the U.K. it seems likely that paraffins up to C_4 could become available in large quantities at prices which will enable them to compete as raw materials with olefins.

A second factor in the changing picture of paraffins is new chemical discoveries. For example, acetic acid is to be manufactured from n-butane in Germany.

It looks as though paraffins as a group are likely to become more important as chemical intermediates.

Auxiliary Chemicals. The manufacture of alcohols as intermediates for plasticers for p.v.c. is now mainly via the carbonylation process, i.e., the catalytic addition of CO and H_2 under pressure to olefinic double bonds to give aldehydes. In 1959 about 220,000 tons of alcohols were made by this route, including roughly 100,000 tons in the U.S., and 60,000 tons in the U.K. I.C.I. have recently announced extensions of capacity to total over 140,000 tons a year. (See CHEMICAL AGE, 24 December, p. 1047). In addition to I.C.I. plant in the U.K. there are commercial units in West Germany, France and Italy and several in the U.S.

Continued substantial growth of p.v.c. applications which may require 50 parts of plasticiser to 100 parts of polymer by weight is forecast. Many uses of plasticised p.v.c. now well established would not have been possible without the development of technically satisfactory plasticisers. Carbonylation plasticisers have developed very rapidly to meet this demand.

Some Process Aspects. On the whole the tendency in the organic intermediate field is to move away from multi-product processes to single product processes although there are a few processes giving more than one product being taken up increasingly. One example of this is the cumene process for the manufacture of phenol. In general, however, more capital is required for the purification of products than for the actual reaction, and on the whole much less spectacular practical developments have been made in the last 20-30 years in separation techniques than on the chemical step in processes.

There is an increasing tendency to buy and exchange process rights and know-how in view of the rapidly changing field of organic intermediates which demands, and will continue to demand, a relatively high rate of process development.

Another interesting development is the increasing part which chemical construction firms are playing in the industry. While some are solely concerned with erecting plants to their clients' specifications, others are also active in developing new processes. This type of plant has particular appeal to companies wishing to get a foothold quickly in the market.

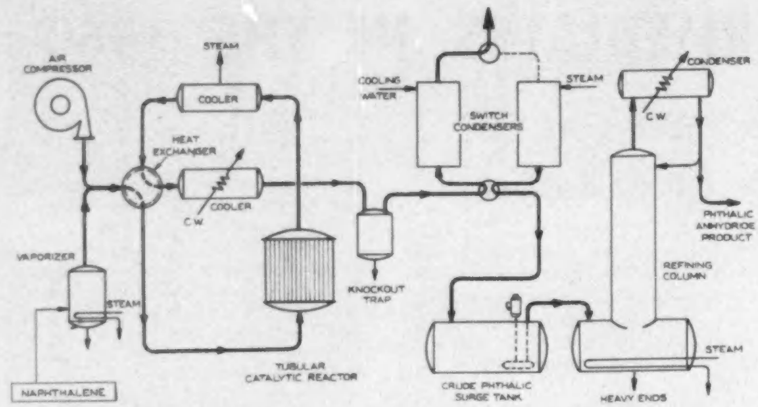
Changing Pattern in Production and Use of Phthalic Anhydride

THE relative merits of fixed and fluidised bed reactor systems for phthalic anhydride production continue to be disputed, and some relevant points were made in a paper presented to the Manchester symposium by Dr. Ralph Landau, executive vice-president of Scientific Design Co. Inc., U.S., and Mr. Hugh Harper, managing director, SD Plants Ltd. They advanced evidence to show that the anticipated advantages of the fluidised bed have not actually evolved in practice. The expected higher yields due to the use of potassium promoted catalyst have only partially been realised and it seems clear that a fluidised bed reactor tends to give a yield of five or ten points below a fixed bed using the same chemical type of catalyst. Also, although the air ratio has been reduced to as low as 10 or 12 lb. of air per lb. of naphthalene instead of the more conventional 18-22 lb. employed in fixed bed units, various factors, such as the greater pressure drop which results from the great height of the dense bed and the resistance to gas flow of the required filters for the catalyst (covered with catalyst fines and periodically requiring blowback), make the fluidised bed not appreciably more economical than fixed bed design, power consumption being one of the principal utilities costs in making phthalic anhydride.

The close temperature control of the fluidised bed has turned out to be of little practical importance, while a further deficiency of the fluidised system is the high catalyst loss due to attrition, or to shutdowns for cleanouts and subsequent dumping of catalyst. It has also become apparent that the fluidised bed requires a specially pure naphthalene for optimum performance.

The glamour of the fluidised bed, however, continues to excite the imagination of technical men, and the authors concede that the number of companies who have experimented with the fluidised bed process is the best guarantee that its limitations and proper applications will eventually be much better understood.

The paper, some points from which were commented on in CHEMICAL AGE last week (p. 539), began with a survey of the history and development of phthalic anhydride manufacture and technology, going on to discuss develop-



Schematic diagram of the Scientific Design Co.'s fixed bed process for the manufacture of phthalic anhydride

ments in reactor design, and in raw material supply. It was now possible by the SD process to obtain phthalic anhydride yields from ortho-xylene comparable to those obtained from naphthalene in the U.S.—of the order of 85-90 lb. of phthalic anhydride per 100 lb. of ortho-xylene. Also, the appreciable amount of maleic anhydride produced by the ortho-xylene oxidation can be recovered and converted inexpensively to fumaric acid. The use of ortho-xylene is also rendered attractive by the fact that plants can produce phthalic anhydride from ortho-xylene at the same capacity from the same reaction system and catalyst as they can from naphthalene.

The catalyst developed by Scientific Design that makes this possible also permits the utilisation of naphthalene or ortho-xylene interchangeably, or mixtures of naphthalene and ortho-xylene. Now that the same or high yields can be obtained with ortho-xylene at the same productivities, the authors forecast that a major shift from naphthalene to ortho-xylene will develop as producers re-evaluate the economics of the process and raw materials. Ortho-xylene, they said, is much more plentiful and potentially available at substantially lower prices than petroleum naphthalene.

Dealing with the uses of phthalic anhydride, the authors point to the sharp changes in its end use pattern that have accompanied the growing demand through the years. In the U.S., the biggest outlet is in phthalic alkyd resins, which take about 45% of the total phthalic anhydride consumption, and go into surface coatings for cars, appliances, boats, etc. However, many other types of coatings—acrylics, vinyls, expoxies, water-based paints—have gained in popularity so that alkyds are beginning to face stiff competition. Predictions are that alkyds, bolstered by such recent advances as water-based alkyds, will probably undergo modest growth within the next few years, but alkyd growth will not parallel phthalic anhydride gorwth.

Moving in to "take up the slack" caused by the slow growth of alkyds are the phthalate esters, monomeric plasticisers that are now the second largest use of phthalic anhydride in the U.S. More than twice the 86 million lb. of phthalic anhydride that went into phthalate esters in 1955 is expected to go to this use in 1965. The third major outlet for phthalic anhydride—polyesters—is also the fastest growing. In 1960, 30 million lb. of phthalic went into polyesters in the U.S. and this is expected to double by 1965. The growth factor hinges on glass fibre reinforced plastics, which take about 70% of total polyester production. Other end uses for phthalic anhydride such as dyes, pigments, pharmaceuticals, dielectric materials and decorative laminates will probably continue to expand in line with the population growth.

Prodorite Expansion to Cope with Fabrication of 'Giant Constructions'

FURTHER expansion of production facilities is in hand by Prodorite Ltd., Eagle Works, Wednesbury, Staffs. Their original factory unit, the William Burton Works, was erected in 1958 to house the rapidly expanding Orglas resin/glass constructions division, with a working area of 7,500 sq. ft.

In 1959 a further unit with 7,500 sq. ft. of floor space was added to cope with the increased volume of work being undertaken by the Plastics Division, which was transferred from the main Eagle Works. After 18 months it has become necessary to add a further unit, this with a working area of 8,400 sq. ft. and a height of 35 ft. to enable these two divisions to fabricate giant constructions in rigid p.v.c. and Orglas resin glass laminates. The provision of a 10-ton overhead crane will allow large steel tanks to be lined with plasticised p.v.c. and sheet neoprene.

This new unit is scheduled to go into production in the late spring of this year.

Berk's Trade in Molten Sulphur

Molten sulphur handled annually by the road tanker fleet of F. W. Berk and Co. Ltd. amounts to 50,000 tons a year. This figure was given correctly in the heading to a special article dealing with the subject in our issue of 25 March, but was incorrectly given in the text as 500,000 tons.

Dr. Adams Discusses U.S. Production of Intermediates for Dyestuffs

ALTHOUGH 'Intermediates for dyestuffs and allied industries' was the title of the paper delivered by D. A. W. Adams, research and development director of Hickson and Welch, it can be said that today the emphasis would be on intermediates for allied industries. Dr. Adams paper was given at the Manchester symposium.

Traditionally, the raw materials for dyestuffs intermediates were benzene, toluene, crude xylene, naphthalene and anthracene derived from coal tar. Today coal tar is largely supplemented by petroleum, and xylenes have become of much greater importance. All three isomers are now produced as commercially pure products in the U.S. and on the Continent. These have been made available for the large uses outside the dyestuffs industry, but the availability of these pure isomers has been taken advantage of in the dyestuff and the pharmaceutical industries.

Ethylbenzene is being produced synthetically from benzene and ethylene in vast tonnage in this country and in the U.S. for conversion to styrene and polystyrene. U.S. production of styrene was 1,500 million lb. in 1959.

In the early days of the dyestuffs industry, the demand for phenol was adequately met by its isolation from the acidic fractions of coal tar. Today phenol is a major general intermediate; the U.S. production has increased from 265,000,000 lb. in 1947 to 692,000,000 lb. in 1959.

The greatest developments in the aromatics field in recent years have been in the field of oxidation, mainly because of the ever-increasing importance of carboxylic acids outside the dyestuffs field.

The most important intermediate of this field is phthalic acid, mainly in the form of the anhydride. The U.S. production of phthalic anhydride in 1959 was 359,000,000 lb., an increase of 250% in 12 years.

Will

Mr. Eric Malcolm Fraser, C.B.E., former director of Pan Britannica Industries Ltd., and I.C.I. sales controller, and wartime Director-General of Aircraft Production, who died on 9 December, left £25,111 (duty paid £5,243).

Bookshelf

Chemical Processing in the Nuclear Energy Field

PROGRESS IN NUCLEAR ENERGY, VOL. III. PROCESS CHEMISTRY. Edited by *F. B. Bruce, J. M. Fletcher* and *H. H. Hyman*. Pergamon Press, London, 1961. Pp. vi + xii + 474. £5 5s.

At the second Geneva Conference in 1958 on the Peaceful Uses of Nuclear Energy, about 200 papers were given on chemical processing of uranium from its ores, its purification and recovery, and, to a lesser extent, on the extraction and purification of plutonium, thorium, etc. The present volume consists of 27 of these articles together with a review of the whole set.

The first two sections deal with the winning of uranium from its ores and sources such as coal-ash and natural water, together with the refining of the metal. These are followed by accounts of aqueous procedures for treating irradiated fuels. In general a wide variety of solvent extraction processes are described although they are mainly related to the technical applications of organic phosphate and amine extractants. This section occupies about one-third of the total contents in contrast to more recent non-aqueous processes which are illustrated by a set of five papers.

For a final contribution, Bruce has prepared a very clear review of the above topics and the others covered by the whole 199 papers concerned with process chemistry. These additional matters include the production of thorium, zirconium and beryllium, purification of the lanthanides, niobium, tantalum, fluorine and graphite as well as some aspects of radio-isotope production.

It is obvious that this book will be of interest and value to chemists employed in the nuclear reactor industry and to technical institutions which teach nuclear reactor chemical technology. However, many of the newer process such as solvent extraction, ion-exchange resins and the usage of fused salts and liquid metals as extractants, separators and refiners are clearly going to be increasingly applied to a wider range of metals, particularly in connection with their production from low-grade sources.

Rare Earths

RARE EARTH ELEMENTS. Israel Program for Scientific Translations, Jerusalem, Israel, 1960. Pp. 356. 78s.

A conference on the rare earth elements was held in the Moscow Academy of Sciences in 1956. The 42 papers, which deal with separation techniques, analyses and a few examples of the practical uses of these metals, were published in book form by the Russians in 1959.

The separation processes described comprise improved versions of well-known fractional crystallisations of e.g. double sulphates, basic nitrates and oxalates, sometimes coupled with complexing agents, and an interesting account of separations based on double salts formed with nickel nitrite. Other articles describe chromatographic procedures, the use of ion-exchangers, solvent extraction and electrochemical separations.

Analytical methods discussed include some of the above themes but the majority are based on emission spectra, absorption spectra of complexes, scintillation spectrophotometry of irradiated samples or X-ray spectroscopy.

The last six articles (on practical applications) cover the development of special glasses and crystal phosphors, glass polishing with mixed oxides, metal alloys and the catalysis of certain organic reactions.

In spite of the time which has elapsed since the conference, much of this book is of sufficient worth for recommendation to the libraries of universities, advanced technical institutes and to those industries concerned with the lanthanides.

Edible Oils

THE CHEMISTRY AND TECHNOLOGY OF EDIBLE OILS AND FATS. Edited by *J. Devine* and *P. N. Williams*. Pergamon Press, London, 1961. Pp. xiii + 154 + 8 tables. 35s.

This volume records the proceedings of a conference sponsored by Unilever Ltd. at Port Sunlight in March 1959 and includes seven papers (all by Unilever staff) together with bibliographies, discussions and a register of the 87 participants.

The first paper describes major aspects of glyceride chemistry such as partial esterification, ester exchange *cis-trans* isomerisation, hydrogenation and autoxidation.

The second treats the economic aspects of fatty food consumption in the U.K. and the third describes the main technological features of the batch refining and blending of fats and oils. There follows a very general review of analytical methods applicable to fats and oils.

The fifth and sixth papers will be of interest to chemists directly concerned with lipids. The former describes the application of spectrophotometry and the isotopic dilution technique to the determination of linoleic acid; the latter surveys the application of gas/liquid chromatography to the separation of fatty acid methyl esters.

This is followed by an Appendix (24 pages) giving full experimental details of numerous routine chemical and physical analytical methods

Although the book contains interesting material it is not an addition to the literature of lasting value.

Carbon Compounds

CHEMISTRY OF CARBON COMPOUNDS, VOLUME IVc, HETEROCYCLIC COMPOUNDS. Edited by *E. H. Rodd*. Elsevier Publishing Company, London, 1960. Pp. xviii + 736. £6 10s 0d.

This is the third, and final, section of Volume IV and it opens with a survey of six-membered ring systems containing two or more hetero atoms. A separate chapter is included on the phenazine and related dyestuffs which fall under this classification. The systematic survey concludes with a chapter on seven-membered and larger rings. The remaining and greater portion of the volume is concerned with specific groups of natural products. These include purines, pteridines, alloxazines, as well as nucleosides, nucleotides and nucleic acids. These chapters, particularly the last, should render this volume of particular interest and value to the general reader. There follow seven chapters on alkaloids. The character and style of the volume follow the pattern set by its forerunners, and it constitutes a welcome addition to the series.

Spectroscopy

THE ENCYCLOPAEDIA OF SPECTROSCOPY. Edited by *G. L. Clark*. Chapman and Hall, London (Reinhold, N.Y.), 1960. Pp. xvi + 787. 200s.

This volume is a compilation of articles by some 120 contributors (including four non-residents of the U.S.) perhaps 10% of whom are recognised authorities in their general fields. A very wide range of spectroscopic aspects is included—emission and absorption: microwave, infra-red, visible, u.v., X-ray, gamma-ray, n.m.r. and mass spectra. The editor claims that 23 kinds of spectroscopy are dealt with "and under each of these the various aspects of history, theory, instrumentation, techniques, interpretations and applications of each method". This claim is followed by the truly significant admission that this production effort involved "the writing of 25 articles to fill in gaps, several at the last minute".

There are 35 entries under "Infra-red Spectrophotometry". Four of the principal items are reprinted from the Perkin-Elmer 'Introduction to Infra-red Spectrometry' (1952). Four and a half pages (costing more than a shilling) are devoted to empirical frequency-intensity-structure relationships for (N-H) combination bands of substituted anilines—i.e. to a rehash of one paper in Analytical Chemistry.

The last two items in this pretentious volume are entitled: X-ray telescope for the 1-100 A region: X-ray view of the petroleum industry (a review published in 1958).

AMENDMENTS TO 1961 LIST OF APPROVED AGROCHEMICALS

THE Agricultural Departments have announced the following amendment to the 1961 List of Approved Products published on 1 February 1961.

At the beginning of the seed dressings section the following caution is added. Dressings containing dieldrin, aldrin and heptachlor can kill birds that eat treated seed. Great care should be taken not to leave any treated seed lying about when it is being stored or sown. Higher strength dressings for wheat-bulb fly should be used only on winter wheat and then only in areas where there is a real danger of attack.

An additional list of approved products has also been announced: DDT emulsions and miscible liquids, Chafer's W.I. 25 DDT Insecticide, J. W. Chafer Ltd.; DDT wettable powders, Boots DDT dispersible powder (50% DDT), Boots Pure Drug Co. Ltd.; Diazinon atomising solutions, Diazitol atomising concentrate, The Murphy Chemical Co. Ltd.; Diazinon miscible liquids, Diazitol liquid, The Murphy Chemical Co. Ltd.; Endrin sprays, Endrex 20, Shell Chemical Co. Ltd.; Fluoroacetamide sprays, Megatox, W. J. Craven and Co. Ltd.; Phenkapton miscible liquids, Phenatol liquid, The Murphy Chemical Co. Ltd.; Phenkapton wettable powders, Phenatol wettable, The Murphy Chemical Co. Ltd.; Sevin, Boots codling moth spray, Boots Pure Drug Co. Ltd.; Dodine, Melprex 65 dodine fungicide, Cyanamid of Gt. Britain Ltd.; Organo-mercury-sulphur foliage spray, Sulpham dispersible powder, F. W. Berk and Co. Ltd.; Aminotriazole, Weedazol-T-A, A. H. Marks and Co. Ltd.; MCPB-MCPA, Bexone plus, Plant Protection Ltd.; Simazine, Bladex, Shell Chemical Co. Ltd.; gamma-BHC-Thiram dry seed dressings, Berk's lindane thiram seed dressing, F. W. Berk and Co. Ltd.; alpha-naphthylacetic acid (pre-harvest fruit drop growth regulators), Endrop, Shellestone, Shell Chemical Co. Ltd.

New D.C.L. Film on Safety and Solvents

A NEW film on safety precautions in the handling of highly flammable materials has been made at the Salt End, Hull, industrial chemicals factory of D.C.L. Chemical Division under the supervision of Mr. J. Howlett, division director and general manager of the D.C.L. site at Hull. Mr. Howlett is an authority on safety precautions in the field covered by the film.

The elaborate precautions taken, particularly those designed to prevent the generation of static electricity, are detailed with the assistance of animated diagrams. The film is available on free loan to responsible organisations on application to D.C.L. Chemical Division's publicity department at Devonshire House, Mayfair Place, London W.1.

The D.C.L. factory at Hull obtains most of its raw materials by sea tanker from the Grangemouth plant of British Hydrocarbon Chemicals Ltd., the largest purely petrochemical complex in Britain. This film shows plants at Grangemouth while at Hull, the precautions taken from the point of arrival of a sea tanker at the Salt End jetty and the discharge of the load by pipeline to bulk storage, are depicted.

The film next shows a typical modern process plant, intermediate product storage, final product storage and the procedure at bulk and drum filling installations.

Fire-fighting in a chemical factory calls for special techniques and the film includes a realistic turn-out by both the works brigade and East Hull brigade.

New Trading Plan for Aspro-Nicholas

ALL trading by Aspro-Nicholas is now being carried out by subsidiary operating companies and four new companies have been set up for this purpose.

Nicholas Products Ltd. will undertake the former U.K. trading and manufacturing activities of Griffiths Hughes (Proprietaries) Ltd. and Aspro-Nicholas Ltd. Mr. J. W. Jamison, parent company managing director, will be chairman with Mr. R. Rigby as managing director.

Nicholas Laboratories Ltd. have been formed to market products of the former Ethical Pharmaceutical Divison of Aspro-Nicholas Ltd.

U.S. and Continental subsidiaries will continue under their existing direction, but other overseas markets and exports will be co-ordinated through another new company, Nicholas Overseas Investments, who will handle U.K. exports.

Ivers Lee Ltd., contract packagers, become a divisonal subsidiary of Aspro-Nicholas, but will still operate as an autonomous company with their own board.

Fall in Chemicals Production Index

Board of Trade's index of industrial production for the chemicals and allied industries in December stood at 142 (average 1954 = 100), compared with 152 in November and a 1960 average of 145. The following is an extract from the index:

	1959	1960	Dec. 1960
All industries	113	120	119
Chemical and allied industries	131	145	142
Coke ovens, oil refineries, etc. ..	127	139	146
General chemicals, etc.	132	146	141

Finland will Keep Quotas on Fuel, Tar and Fertiliser Imports

FOLLOWING the recent signing of an Agreement of Association with the E.F.T.A. countries in Helsinki, Finland will be become a member of the E.F.T.A. community, the exception as far as tariffs are concerned being that Finland may reduce her import duties on certain goods in accordance with a retarded time-table: the main goods in question being textiles, tyres and a range of iron and steel manufactures. The other exception is that Finland may also retain indefinitely her quantitative restrictions on imports of certain other goods—these include natural calcium phosphates, natural aluminium calcium phosphates, apatite and phosphated chalk; tar distilled from coal, lignite or peat, and other mineral tars including partically distilled tars and blends of pitch with creosote oils or other coal tar distillation products; oils and other products of the distillation of high temperature coal tar, and various other oils and products; mineral or chemical fertilisers, phosphatic, with the exception of basic slag; mineral or chemical fertilisers,

The first tariff reductions on those goods which are not excluded will become operative on 1 July 1961.

In Parliament

Low-Priced Tetracycline in France

Asked if he would encourage U.K. hospital authorities to buy the antibiotic tetracycline in France, where it was said to be available at an equivalent price of £25 10s per 1,000 tablets compared with a U.K. price of £58 per 1,000 tablets, Mr. Enoch Powell, Health Minister, said he had no knowledge of supplies available in France at the price stated.

Annual Fertiliser Use of Potash

Total annual U.K. usage of potash is about 425,000 tons of potassium oxide, said Mr. C. Soames, Minister of Agriculture, in the House of Commons last week. He pointed out that subsidies were not paid on potash, organic fertilisers, or any fertilisers not used in agriculture. About 320,000 man-hours, equivalent to about 140 staff, are used annually in the Ministry to deal with the fertiliser subsidy scheme.

Changes in Drawback on Hydrocarbon Oil Duties

New drawbacks of customs or excise duty paid in respect of hydrocarbon oil used in the production of solid neoprene synthetic rubber, neoprene latex and certain lube-oil viscosity modifiers are allowed for in the Hydrocarbon Oil Duties (Drawback) (No. 1) Order, 1961 (S.I. 1961/553).

Overseas News

GOODRICH-GULF POLYDIENE TIE-UPS WITH HÜLS AND POLYMER, SARNIA

WORK is shortly to begin on the construction of a new plant by Chemische Werke Hüls AG for the production of polybutadiene and polyisoprene. In February 1960, Hüls announced that they had obtained a licence from Studiengesellschaft Kohle GmbH for the production of polydiolefins, using Ziegler type catalysts, the process incorporating patent rights held by Goodrich-Gulf.

Goodrich-Gulf and Chemische Werke Hüls independently developed the new synthetic rubbers in the U.S. and Europe. They have now concluded an agreement to pool their knowledge concerning the production of stereo-specific rubbers.

It is thought that the combination of petrochemical knowledge and widely differing polymerisation techniques will lead to end products which will meet the ever-increasing demands of the motor and allied industries.

Plans to build a multi-million dollar plant at Sarnia, Ont., are in hand by Polymer Corporation, Sarnia. Since 1958 a solution polymer pilot-plant has been in operation at Sarnia, producing a variety of stereospecific polymers. Last year the plant produced polybutadiene at the rate of several tons a month for evaluation purposes.

Construction is to start this summer and the plant should be operating before the end of 1962. The Karl Ziegler process will be used under licence. A licence from Goodrich Gulf Chemicals Inc., U.S., has also been obtained for production of stereospecific rubbers.

In addition to the polybutadiene unit Polymer Corporation are installing facilities for butyl rubber, speciality rubbers and black masterbatch.

Shell Chemical also hold a Goodrich Gulf licence for their polydiene rubber project; as stated in 'Overseas News', 25 March, Goodrich Gulf are themselves building a 10,000 tons/year polybutadiene plant.

Olin to Work on Boron-containing Polymers

Olin Mathieson Chemical have received a $250,000 contract to make basic research studies in boron chemistry for the Office of Naval Research. The research work, to be conducted at the Olin research centre, Newhaven, Con., will be in the field of high temperature resistant boron-containing polymers.

Bethlehem Steel will be Major Coke-chemicals Producers

One of the biggest U.S. steel producers, Bethlehem Steel Co., Bethlehem, Penn., are to build a large-scale chemical plant at Sparrows Point, Maryland, to extract chemical compounds from coke oven tar. The unit, which is planned to start production at the end of this year, will have a throughput of more than 200 million lb./year; intermediates produced will contain some 42 million lb. or more of crude naphthalene. The Sparrows Point products will be passed on to Allied Chemical's plant in Philadelphia for further processing.

U.S. Co. to Build German Petrochemical Plant

Continental Oil Company of Houston, Texas, and Deutsche Erdol AG (D.E.A.), Hamburg, have joined forces to construct a multi-million dollar petrochemical plant near Hamburg, Germany, and to form a German-based firm to produce and sell the plant's Alfol line of industrial alcohols. The new jointly owned firm will have headquarters near Hamburg and will be known as Condea Petrochemie GmbH.

Condea will build their Alfol plant on a site near the Kiel Canal north of Hamburg and will introduce their new line of industrial alcohols made from petroleum, particularly in the Common Market countries. The plant, scheduled for completion in mid-1963, will have an annual capacity of about 50,000 tons of industrial alcohols. Ethylene from D.E.A.'s refinery at Heide, near the Condea site, will serve as raw material for the new plant.

B.A.S.F. One-Step Fluid-bed Olefin Route "A Success"

Badische Anilin- und Soda-Fabrik AG. state that their fluid-bed plant for the production of olefins from mineral oil has now been in operation for 18 months without interruption. B.A.S.F. describe this as "an important development and one above expectations in the field of mineral oil cracking." All mineral oil types, including those with high sulphur content and mineral oil residues, can be processed continuously from crude state to olefins in one stage.

Yields are said to be excellent. Some 200,000 tonnes of crude form the throughput of the plant, which produces annually 80,000 tonnes of gaseous olefins, including 50,000 tonnes of ethylene. Production takes place in two reactors, each with 5.5 sq. m. operating surface.

U.S. Contract for Indonesian Urea Plant

A $38 million contract for design and construction of a new urea plant in Indonesia has been awarded to Morrison-Knudsen International Constructors, Inc., Boise, Idaho. The plant will be built for the Government of Indonesia at Palembang, Sumatra, and will have a rated capacity of 100,000 tonnes of urea a year. It will be located along the Musi River on the outskirts of Palembang.

The urea will be processed by the Palembang plant from natural gas piped to the site from nearby gas fields. In addition to design and construction, the U.S. construction firm will initially operate the completed plant and will handle training of Indonesian operating personnel.

Korean Expansion in P.V.C. and Caustic Soda

The Puk Sam Chemical Corporation, South Korea, who have just received promise of credit amounting to U.S. $3,300,000 from the U.S. Development Fund, state they will build production units at Samchok, on the country's east coast from the manufacture of 1,800 annual tonnes of p.v.c. and 1,300 tonnes of caustic soda. At present no p.v.c. and only 340 annual tonnes of caustic soda are produced in South Korea, while annual consumption amounts respectively to 1,400 tonnes and 5,000 tonnes.

German, Italian and U.S. Aid for U.A.R. Fibre Project

Farbenfabriken Bayer AG, Leverkusen, E. I. Du Pont de Nemours and an unnamed Italian company are stated to have offered to build necessary plant and to supply production processes for a scheme under which a chemical-fibre plant is to be built in the United Arab Republic. The unit, to be constructed in Egypt under the Five-Year industrial plan, will take mineral oil waste from a nearby refinery as feedstock.

New Low-Friction Rubber Produced

A new rubber, which has a low friction surface similar to that of p.t.f.e., but which retains its elasticity, has been developed by Quantum, Inc, U.S. With the new rubber it should be possible to produce dynamic seals that will operate for a long time without lubrication.

The rubber is made by the graft polymerisation of chemically active monomers to the elastomer surface. The graft polymer is then hydrolised to the corresponding acid and fluorinated. By varying the technique it is possible to produce surfaces with different coefficients of friction, according to the company.

Baird to Make Sorbitol at New Midwest Site

Baird Chemical Industries, 10 West 33rd Street, New York 1, are to construct a major production facility in the Midwest. Sorbitol will be the principal product of the production programme's initial stage. Subsequent stages will produce organic chemicals presently under development and not yet disclosed by Baird.

Baird will be the only sorbitol producer in the U.S. without a captive requirement. This factor will provide added assurance of an adequate supply to present and prospective sorbitol consumers.

The company will introduce new use technology.

Sorbitol is widely used as an economic substitute for glycerine in such products as pharmaceuticals, dentifrices, cosmetics, candy, foodstuffs, tobacco, and other products which require a humectant-plasticiser vehicle. The esters of Sorbitol are very effective emulsifiers. A relatively new use with much potential is in the production of polyurethane foams.

Japanese Firm Claims Polypropylene Process

Tokuyama Soda Co. Ltd., Japan, claim to have developed a new process for the production of polypropylene. After patenting the process, the firm intends to start production in August of this year with an annual rate of 2,000 tonnes. Output is later to be increased, in co-operation with Idemitsu Kosan, to an annual level of 10,000 tonnes.

U.S. Celanese and Hoechst Plan Nitrile Fibre Unit

Plans to produce and market nitrile fibre in Europe have been announced by the Celanese Corporation of America and Farbwerke Hoechst. A new joint company, Bobina Faserwerke G.m.b.H., will make the fibre at Bobingen, West Germany. Capacity will be 32 million lb./year, with production scheduled to start early next year. Hoechst will supply all raw materials and market the fibre under the trade name Travis. Exclusive world rights for the fibre were acquired some time ago by Celanese from B. F. Goodrich.

Soviet Union Develops Acetylene from Gas

A new method for the production of acetylene from natural gas from the Saratov gas fields is being developed at the Moscow State University by Professors Ye. N. Yeremin and N. I. Kobozev. The gas, mainly methane, is preheated to 800 to 900°C. before being subjected to thermal cracking. This makes it possible to reduce the power consumption by 20 to 25% and to increase the output of acetylene. Further studies are aimed at the production of acetylene from mixtures of methane with heavier hydrocarbons. The Saratov synthetic alcohol plant is introducing the production of acetylene by the method of electric cracking on an industrial scale.

Aspro-Nicholas Plans Second French Plant

The Nicholas group plans to build a new plant and laboratory centre at Gaillard, France, near to the Swiss border city of Geneva. The centre, the second in France, will be concerned mainly with Common Market production programmes. The group already has plants in Holland and Belgium, as well as in France.

S.D. May Licence New Catalyst for Phthalic

Licensing of their new catalyst for the production of phthalic anhydride from *o*-xylene or naphthalene, either separately, or in mixtures, may be considered by Scientific Design, reports *Chem. and Eng. News*, 3 April. Until now S.D. have only licensed their own designed plants; catalyst licensing would be carried out by Catalyst Development Corporation, an S.D. group company.

The convertible catalyst allows plants to make phthalic from *o*-xylene at the same capacity and from the same reaction system and catalyst as it does from naphthalene.

Monsanto to Make Oxo Chemicals in Texas

The largest U.S. plasticiser producers, with an estimated phthalate ester capacity of 100 million lb./year, Monsanto Chemical Co. state they will make oxo chemicals at their new Chololate Bayou, Tex, site. Plant will be completed by the end of 1962 for the production of butanol, isobutanol, isooctanol, isodecanol, 2-ethylhexanol and other alcohols for Monsanto's own use.

Soda Output Up in Poland and Rumania

Poland last year produced 528,500 tonnes of 98% calcined soda and 172,500 tonnes of 96% caustic soda. These figures are higher by, respectively, 15.8% and 8.8% than those of 456,500 tonnes and 158,600 tonnes recorded in 1959. In Rumania, output of calcined soda went up by as much as 72% over the year, from 106,000 tonnes to 182,000 tonnes, while that of caustic soda increased by 19% from 64,000 tonnes to 77,000 tonnes.

U.S. Production of Sulphur Higher in 1960

U.S. production of native sulphur (Frasch) last year totalled 4,972,762 tons (4,553,634 tons). Sales totalled 5.08 million tons (5.18 million tons) and stocks at the year end amounted to 3.6 million tons (3.8 million tons). Production of recovered sulphur in 1960 totalled 724,022 tons (650,763 tons), with sales at 754,800 tons (687,788 tons). Year-end stocks totalled 109,467 tons (140,246 tons).

Sulphur imports last year amounted to 741,439 tons, valued at $15.46 million (642,458 tons, valued at $13.89 million).

Hercules Powder Sets Up Company in Finland

A new company, OY Hercofinn AB has been set up by Hercules Powder. The new company is to build a plant at Tampere to make chemicals for the Finnish paper industry. Construction of the plant is to start about mid-1961, and it should be completed early next year. The plant will make rosin size, resin emulsions and defoaming agents.

Formaldehyde Plant for Rumania

A formaldehyde plant has now been opened at the Victoria chemical combine near Orasu Stalin, Rumania. Production is based on methyl alcohol manufactured on the same site. Equipment for the new plant was supplied by a Bucharest firm.

Du Pont to Build Methylamine Plant

Du Pont has started construction of a plant to make methylamines and derivatives, including dimethylacetamide, dimethylamine, dimethylformamide, and monomethylamine. The plant, which is sited at Belle, W. Va., more than doubles Du Pont's methylamine capacity.

$2.3 m. Contract for Helium Wagons

A $2.3 million contract for 23 helium tank wagons has been awarded to ACF Industries Inc. by the U.S. Bureau of Mines. The new cars are needed to keep pace with the mounting orders for helium which has acquired many important uses in industry, and in the fast-growing fields of atomic energy, missiles and space exploration.

Helium shipments in the fiscal year 1960 totalled 420 million cu. ft. and the Bureau expects the figure to be 530 million cu. ft. in 1961.

According to the Bureau, helium tank wagons are the only railway wagons of their kind. They can hold 300,000 cu. ft. of helium at a pressure of 3,800 lb.

U.S. Government Should Limit Demonstration Saline Water Conversion Plants

COMPETITION between firms for shares of the saline water conversion market should demonstrate the economics of various conversion processes. There is no need for the U.S. Government to get into the field by building its own demonstration plants, according to Mr. C. Skinner, vice president of Fairbanks Whitney Corp., who was addressing hearings of the House Sub-committee on Irrigation and Reclaimation (*Chem. and Eng. News*, Vol. 39, No. 13).

The Committee was discussing the bills to expand the Government's saline water programme. Mr. Skinner urged that the Government should step up its research programme on saline water and not build more large plants to demonstrate conversion beyond the five plants now under construction or authorised.

Industrial firms should, within the next two years, have package plants which will convert saline water to fresh water at a reasonable cost.

The Government's research programme should be extended. The kind of programme the Government could undertake was beyond the capabilities of industry. Mr. Skinner suggested that the Office of Saline water should increase its efforts to recover valuable by-products from the brine effluent produced by the conversion plants. Because of the high concentration of salts, it should be possible to produce bromine, magnesium and other chemicals at a substantial cost reduction.

PEOPLE in the news

● **Mr. M. A. L. Banks,** a director of British Petroleum and of British Hydrocarbon Chemicals Ltd., is one of the three B.P. nominees to the board of the newly-formed B.P.-California Ltd. set up to operate the aromatics plant at the Isle of Grain refinery. Other B.P. directors are **Mr. J. Moffat** and **Mr. D. G. Smith,** head of the B.P. Petroleum Chemicals Department. Nominated directors by California Chemical (a subsidiary of Standard Oil of California) are **Mr. F. Powell, Mr. J. V. Powell** and **Mr. T. G. Hughes** (see also CHEMICAL AGE, 1 April, p. 553).

● **Dr. A. W. F. Middelberg** is to take over the post of general manager of the synthetic fibre plant at Breda, Holland, of N.V. Hollandsche Kunstzijde Industrie, a subsidiary of Algemene Kunstzijde Unie N.V., Arnhem. The present general manager, **Mr. H. F. Wesenhagen,** is to join the A.K.U. subsidiary, American Enka Corporation.

● **Mr. A. B. Miles,** aged 34, becomes chief engineer of Darchem Engineering Ltd., a member of the Darlington Chemicals Group, after six years with the company. **Mr. F. Meadows,** 36, formerly assistant chief draughtsman, succeeds Mr. Miles as chief draughtsman. **Mr. D. A. Rowlett,** 31, has been appointed manager of the Rostenit (stainless steel lining process) Division.

● **Mr. F. J. Stephens,** a member of the board of 'Shell' Transport and Trading Co. Ltd. since 1951 and a managing director since 1957, will on 1 July become chairman in succession to **Lord Godber,** who retires on 30 June. Mr. Stephens will cease to be a managing director of the Royal Dutch-Shell group; **Mr. H. Wilkinson,** a Royal Dutch-Shell managing director, has also been appointed a managing director of the U.K. company. **Mr. D. H. Barran,** president of the Asiatic Petroleum Corporation, New York, has joined the 'Shell' Transport board and will become a managing director of Shell Petroleum and a principal director of Bataafse Petroleum Maatschappij from 1 July.

● **Mr. John Platt, F.R.I.C.,** general works manager of Kemball, Bishop and Co. Ltd., Pfizer's fine chemicals division of the Pfizer Group of companies. He will be responsible for all production and engineering matters within the group. A native of Hull, Mr. Platt was for nine years chief chemist to the Suffolk Chemical Co. Ltd., Ipswich, a subsidiary of Reckitt and Colman Ltd., and from 1951 to 1954 he was works manager to the Associated Ethyl Co. Ltd. He joined Pfizer Ltd. as head of the recovery department of fermentation in 1954.

● **Mr. Derrick H. Carter,** aged 54, a joint managing director (commercial) of the I.C.I. General Chemicals Division, has been appointed chairman in succession to **Mr. Harold Smith** who, as stated in 'People in the News' last week, has joined the I.C.I. main board. Mr. Carter is succeeded by **Mr. John L. Tedbury,** 48, a director of the division, who is also deputy chairman and joint managing director of Plant Protection Ltd., an I.C.I subsidiary. Mr. Carter joined I.C.I. in 1928 as a research and process engineer in the Billingham Division and in 1931 became works engineer of Steatite and Porcelain Products, an I.C.I. subsidiary, and three years later rejoined Billingham Division in the sales control department. After the war he joined the I.C.I. southern region plastics sales department and later went to the General Chemical Division sales control. He was appointed commercial director of that division in 1951 and became joint managing director in 1953. Mr. Tedbury joined I.C.I. General Chemicals Division in 1935 and after the war returned to the sales control department of the division. In 1957 he spent a year in the I.C.I. northern sales region as deputy regional manager before returning to General Chemicals Division, and his subsequent appointment to Plant Protection.

● **Mr. T. Watts, A.R.I.C., A.M.I.Chem.E.,** lately of Colgate-Palmolive Ltd., has joined Process Plant Contractors (Campbell) Ltd., Manchester, as a senior chemical engineer in the design department of the technical division.

● At the first board meeting of CIBA United Kingdom Ltd., held on 27 March, **Mr. S. M. Baldock** agreed to join the board of directors.

● **Mr. C. H. Owen, M.C.,** a director of the Staveley Iron and Chemical Co. Ltd., retired at the end of March. He joined Staveley as a laboratory assistant in 1913 and apart from service in the first world war, spent his whole life with the chemical plant, Devonshire works. In 1934 he was appointed chief engineer of Devonshire works and in 1952 became general manager. He became a director in 1954.

● **Mr. C. D. W. Stafford,** chairman of Beecham Research Laboratories Ltd., and a director of the Beechman Group Ltd., has been appointed chairman of Beechman Pharmaceuticals Ltd.

● Newly appointed to the board of the Staveley Iron and Chemical Co. Ltd. are **Mr. G. R. Buckley** and **Mr. E. M. Summers,** directors of Stanton Ironworks Ltd., **Mr. E. M. Marvill,** director and general manager of the Sheepbridge Co. Ltd., and **Mr. R. F. A. Turner,** who also becomes general manager of Staveley works. These appointments follow the resignation of **Mr. S. N. Turner** and the retirement of **Mr. C. H. M. Owen.**

● **Mr. Donald Kane,** formerly in charge of N.V. Hercules Powder Co., the Dutch subsidiary of Hercules Powder Co., Wilmington, Del, has been appointed managing director of Oy Hercofinn, Helsinki, the new Finnish Hercules Powder subsidiary. Oy Hercofinn will produce paper auxiliaries and is expected to be on stream by the end of 1961, with construction due to start in the second quarter. Site of the plant will be Tampere (see also p. 596).

● **Mr. F. H. Braybrook,** who for the past 18 months has been assisting **Mr. W. F. Mitchell,** director—Co-ordination Company Chemicals—Shell International Chemical Co. and carrying out special assignments for him, will shortly join the management of Shell Italiana S.p.A., Palazzo Shell, Piazzo Della Vittoria,

F. H. Braybrook

Genoa. Mr. Braybrook, who will be responsible for the chemical business of the Italian company, went to Italy in 1950 to develop Shell's chemical business as directeur-général, Shell Chimie and a director of Shell Saint Gobain. On the acquisition of Petrochemicals Ltd. in 1955 he returned to London as director and general manager of that company, a position he held until the amalgamation of Petrochemicals with Shell Chemical —1960. Italy now ranks as Europe's third largest chemical producing nation. Shell's first chemical plant in Italy, and the first there to produce benzene, toluene and xylene synthetically from a petroleum source, is due on stream late this year.

● The Council of Scientific and Industrial Research has approved the appointment of **Dr. C. J. Jackson, O.B.E.,** to be chairman of the Water Pollution Research Board for the period 1 April 1961 to 31 March 1966. Dr. Jackson, who is the executive in charge of all water pollution for the Distillers Co. Ltd. both on the potable and industrial side, was a member of the Water Pollution Research Board from 1956-1960.

● **Mr. E. L. Bush,** chairman of W. J. Bush and Co. Ltd., has been appointed a director of Albright and Wilson Ltd., following acceptance by holders of more than 90% of Bush shares of the recent A. and W. acquisition offer.

● The U.K. trade delegation to South-east Asia, jointly sponsored by the Board of Trade and the Federation of

(*Continued on page 588*)

Copper and Fertilisers Produced in Economical, All-chemical Process

CHEMICAL processes replace conventional smelting and refining steps in converting low-grade ores into high-quality copper strip, tube and wire, in a $23 million, 42 tons/day to be built in the Philippines. The plant, designed by Foster Wheeler Corporation, New York, for Marinduque Iron Mines Agents Inc., will use 75 tons/day of ammonia and 4 tons/day of hydrogen; the products include 42 tons/day of ammonium sulphate for use as fertiliser, together with zinc and iron oxides.

The small size of the plant indicates the advantages of the process for small-investment, low-capacity facilities in underdeveloped areas of the world. Conventional copper smelting and refining plants involve heavy capital expenditure and cannot be operated economically at a capacity of less than about 200 tons/day.

In the process, as described in a recent issue of *Chemical Week*, the ore is concentrated by standard crushing and flotation techniques and is then fed to a pressure vessel in which, under ammonia and air at 125 p.s.i., the copper and zinc go into solution. Some sulphur in the ore is converted into sulphate and the remaining portion forms a residue along with iron impurities. A thickening step follows in which the iron and sulphur settle out for removal and filtering, while the copper and zinc solution overflows and passes to a six-plate distillation system to recover excess ammonia. The ammonia is recycled to the leaching vessel and the metallic solution goes on to an oxydrolysis step followed by a reduction autoclave.

In these steps the sulphur is completely converted into ammonium sulphate and in the autoclave hydrogen reduces the copper oxide to pure copper powder. This undergoes compacting, rolling and fabrication in equipment to be supplied by E. W. Bliss Co., U.S.

Chemetals Corporation, New York, 20% owned by Bliss, are responsible for part of the chemical extraction and direct hydrogen reduction technology, and are offering the copper process for licensing. Another firm concerned is Sherritt Gordon Mines Ltd., Toronto, who have also worked on this technology and are using an almost identical process in a nickel plant, at Fort Saskatchewan, Alberta.

The Philippines copper plant is expected to be ready for operation in 1963 and will enable the island republic to meet all its copper requirements, at the same time supplying fertiliser for rice and sugar growing.

New Nickel Alloy Steel Resists Extreme Pressures and Stresses

CLAIMED to achieve a yield strength of more than 250,000 p.s.i. while maintaining a nil ductility temperature below −80°F, a new 18 % nickel alloy steel developed at the Bayonne, New Jersey, research laboratory of the International Nickel Co. Inc. paves the way for a new family of high-strength steels with advanced engineering design possibilities for civilian and defence applications involving exceptionally high pressure and stress.

One outstanding characteristic of 18%N steel is its notched tensile strength of more than 400,000 p.s.i., measured under the most severe test conditions with a notch radius of .0005 in. Tests have shown that the new alloy has a remarkable resistance to delayed cracking when exposed to a severe corrosive atmosphere in a highly stressed condition.

These attractive properties are imparted to the new steel by the use of a simple heat treatment involving the age-hardening of martensite, known by the abbreviated name of 'mar-ageing'. With proper finishing temperature off the mill followed by air cooling to room temperatures, the treatment consists merely of holding for about 3 hr. at 900°F and air cooling. Solution annealing at 1,500°F before mar-ageing is optional. Quenching is not required, and full properties can be developed in heavy sections with no distortion problems.

The new steel has a nominal composition of 18% nickel, 7% cobalt, 5% molybdenum and less than 0.5% titanium with a maximum of 0.05% carbon. Higher and lower tensile strength can be obtained by modification of this basic composition. There are indications that high strength levels of up to 500,000 p.s.i. or even higher may be achieved in this type of steel.

Draft Codes on Industrial Radioactive Hazards

REQUIREMENTS for the protection of workers against ionising radiations and other hazards from radioactive substances are laid down in a statutory draft of Regulations published by the Ministry of Labour last week. The Ionising Radiations (Sealed Sources) Regulations, 1961, covering 'sealed sources' and certain machines and apparatus producing ionising radiations lay down maximum permissible radiation doses which may be received by employed persons.

People in the News

(*Continued from p. 587*)

British Industries, which will leave on 11 April, includes **Mr. A. Renfrew,** of Imperial Chemical Industries Ltd., who will be on the Malaya-Singapore mission; **Mr. A. R. Robinson,** Fisons Ltd., Thailand-Burma mission; and **Mr. P. C. E. Kirby,** The Distillers Co. Ltd., Philippines-North Borneo mission. The tours, which also include a mission to Indonesia, will last a fortnight, followed by a two-day conference in Singapore.

● **Mr. St. John de H. Elstub, C.B.E.,** who was responsible for the design of the first British liquid fuel rocket motor, has been appointed chairman of the I.C.I. Metals Division in succession to **Mr. M. J. S. Clapham,** who has joined the main board as an overseas director. Mr. Elstub, who is 45, spent three years as an engineer with I.C.I. Billingham Division before joining the R.A.F. in 1939, where he served as a bomber pilot, a flying instructor and as an armament officer on technical intelligence and rocket design. He then spent two years with the Ministry of Supply as chief engineer and deputy chief superintendent of the Rocket Propulsion Department at Westcott. Mr. Elstub joined the division board in 1951 as director in charge of metal production, but later in the same year was seconded as director in charge of Summerfield Research Station managed by I.C.I. Metals Division for the Ministry of Aviation. He resumed full-time duties as metal production director in 1952, and became division joint managing director in 1957. **Dr. W. H. G. Lake, O.B.E.,** succeeds him as joint managing director (technical) of the division, and is also 45. He joined I.C.I. Dyestuffs Division in 1940 and was transferred to the research department Metals Division in 1943. Until 1952 he worked on behalf of the Government's atomic energy project. Dr. Lake in 1953 took charge of the team appointed to construct and commission the commercial-scale titanium melting plant at Witton, becoming a division director in 1957.

● Following acquisition by Fisons Horticulture Ltd. of Eclipse Peat Co. Ltd., **Mr. L. D. Alexander,** chairman and managing director of Eclipse, has retired from the board, but has agreed to act as consultant to Fisons Horticulture for a further period of three years. He is succeeded as chairman by **Mr. F. J. Heath** who is managing director of Fisons Horticulture. **Mr. T. M. W. Alexander,** technical and sales director, and **Mr. J. P. Alexander,** production director, continue in office. They are joined on the board by **Mr. E. I. Lake** as general manager, and **Mr. P. M. A. Packard,** of Fisons. (See also 'Commercial News', p. 590).

● **Dr. Edwin Gregory, F.R.I.C.,** director and chief metallurgist of Edgar Allen and Co. Ltd., Imperial Steel Works, Sheffield 9, has relinquished his full-time executive position, but will remain in office as a 'non-executive' director.

Commercial News

• Fisons Acquire Biggest U.K. Peat Firm
• Reichhold Report Lower Group Profit
• Atlas Powder to Change Company Name
• New Turin Firm to Make Citric Salts

Bakelite

Group trading profit for 1960 of Bakelite Ltd. was £1,350,808 (£1,250,554), while net profit was £644,679 (£613,842). Dividend is 17½% (equivalent to 14.58%). Trading in the first six months of 1960 followed the pattern of the latter part of 1959, but some slackening in demand was experienced in the second half of the year. Mr. S. Adams, chairman, says that the recession experienced in some industries using the company's products, appeared to be diminishing and this should have a beneficial effect on turnover. Bakelite's confidence in the future is underlined by an expansion programme now in hand which will considerably increase output of some materials.

F. W. Berk

Offer of F. W. Berk and Co. Ltd. for the shares of St. Albans Sand and Gravel Co. Ltd. has been approved by shareholders of Alluvial and General Industries (London) Ltd. and is now unconditional. Under the offer 1 million new 5s ordinary shares of Berk have been allotted to Alluvial in satisfaction of the purchase consideration for the issued capital of St. Albans Sand and Gravel.

British Industrial Plastics

The bid of Turner and Newall for the ordinary capital of British Industrial Plastics Ltd. has been accepted in respect of more than 85% of the shares and has been declared unconditional, subject to quotations being granted.

Calder and Mersey

The acquisition of a controlling interest in Farnell Carbons Ltd., a private company engaged in the marketing of activated carbon, has been completed by Calder and Mersey Extract Co. Ltd., a wholly owned subsidary of Forestal Land Timber and Railways Co. Ltd. (see CHEMICAL AGE, 1 April, p. 545).

Fisons Horticulture

Fisons Horticulture Ltd. have acquired the Eclipse Peat Co. Ltd., Ashcott, Somerset, the largest U.K. peat producers, who sell between 20,000 and 30,000 tons of peat a year.

Eclipse Peat, a private company founded in 1869, have works near Glastonbury, Alsager (Ches), and Bolton. The company markets a range of peat products including Humull, Eclipse Sedge Peat, Eclipse No Soil Compost, and Jackpots. (See also 'People in the News', p. 588).

Reichhold Chemicals

Group profit of Reichhold Chemicals Ltd. for 1960, after all charges, including tax, was £257,694 (£328,033). As stated in p. 576, first half-year sales and profits were up on 1959, but the company was hit by a number of adverse factors in the second half of the year. U.K. tax took £202,216 (£234,079).

A final dividend of 15% (same), making 22½% on increased capital (equivalent to 21¾%). Annual meeting will be held at Winchester House, London E.C., on 13 June.

I.C.I.

Out of a total of 12,693,833 £1 ordinary shares of Imperial Chemical Industries Ltd. as a rights issue 12,376,041, over 97% of the issue, have been accepted by stockholders. The balance of 317,792 ordinary shares will, in accordance with the terms of the issue, be taken up by the underwriters (see also CHEMICAL AGE, 21 January, p. 138).

Morgan Crucible

The re-organisation of the Morgan Crucible has now been completed and the company became a holding company on 4 April. Five new wholly owned subsidiaries have assumed the responsibilities for production, trading, research and development.

Atlas Powder

Atlas Powder, who recently acquired the U.S. West Coast pharmaceutical company, Stuart Co., are seeking to change their name to Atlas Chemical Industries Inc.

Born-France

Société des Fours Born-France is the name of a new company set up in Paris for the production and marketing in France and france-zone countries of Born heating aggregates for the petrochemical and petroleum-processing industries. The company, which has a capital of Fr.100,000, has been set up in cooperation with Born Engineering, Tulsa, Oklohoma, by Société Nationale de Matériel pour la Recherche et l'Exploitation du Pétrole (S.N. Marep) and La Réserve Nationale, each of which French companies holds 45% of the Fours Born-France capital.

Chimica del Basento

Chimica del Basento is the name of a new company formed in Naples for the production of 'chemicals and all types of intermediate products'. Initial capital is of Lire 30 million and the president is Dr. Piero Giustiniani, of Montecatini.

Noury Rumianca

A company has been formed in Turin, Italy, with an initial capital of Lire 500 million, to be raised later to Lire 800 million, for the production of citric salts and other chemicals and bearing the name Noury Rumianca S.p.A. Parent companies are the Dutch chemical producers, Koninklijke Industrieele Maatschappij vorheen Noury en van der Lande N.V., Deventer, and the Italian chemical concern Societá Rumianca, Turin.

W. R. Grace

Davison Chemical Division of W. R. Grace has acquired Wichita Fertilizer Co., Wichita, Kan., at an undisclosed price.

Sun Oil Co.

Earnings of Sun Oil Co., U.S., in 1960 totalled $49,272,661 ($42,844,225), or 6.5 cents for each dollar of revenue. Net earnings were equivalent to $3.78/share ($3.48/share). This year Sun Oil will invest three times as much in new manufacturing plants as they did in 1960 and will boost capital spending for new oil and gas production facilities by 17%. In 1960, $131 million ($106.6 million) was budgeted for expansion, modernisation and the drilling of wells.

NEW COMPANIES

AEROMARK CO. (LONDON) LTD. Cap. £500. Suppliers of aerosols, etc. Directors: J. M. Lennard, G. J. Lennard and D. S. Dunn. Reg. office: 34 Shepherd Market, London W.1.

CLEANING CHEMICALS (INDUSTRIAL) LTD. Cap. £600. Manufacturers of and dealers in chemicals, etc. Directors: R. N. Reynolds, P. A. Eaglen and P. Stewart. Reg. office: 175 Lavender Hill, London S.W.11.

LERC LTD. Cap. £1,000. Manufacturers of and dealers in chemicals, etc. Subscribers: G. E. Platt and M. E. Platt. Reg. office: Wern Mills, Nannerch, Flints.

MEESON LABORATORIES LTD. Cap. £22,000. Wholesale manufacturers of pharmaceutical goods, manufacturers of medical and chemical preparations, etc. Directors: F. Meeson, M. I. Meeson, N. A. Barnes and L. Sheridan. Reg. office: 151 Sunbridge Road, Bradford.

INCREASE OF CAPITAL

DURHAM CHEMICAL GROUP LTD., Birtley, Co. Durham. Increased by £100,000, beyond the registered capital of £190,000.

WALLACE AND DENSTON LTD., manufacturers of chemicals, drugs, etc., 94 Avenue Road, London W.3. Increased by £9,000, beyond the registered capital of £6,000.

FABRIQUE DE PRODUITS CHIMIQUES DE THANN ET DE MULHOUSE. Capital of this French chemical company is to be raised by Fr.19,374,900 to Fr.58,124,700.

NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 3 May

Alkoxysilanes and siloxanes. Midland Silicones Ltd. **867 167**
Treatment of polyethylene and like polyolefins and in products obtained thereby. Grace & Co., W. R. [Divided out of 866 819.] **866 820**
Treatment of polyethylene. Grace & Co., W. R. [Divided out of 866 819.] **866 821**
Treatment of polymers and copolymers of propylene. [Divided out of 866 819.[**866 822**
Organosilicon compositions. Midland Silicones Ltd. **867 066**
Low-pressure-catalytic polymerisation of olefinic compounds. Petrochemicals Ltd. **866 763**
Polymeric compositions comprising low-pressure polyolefins. Shell Internationale Research Maatschappij N.V. **866 891**
Stabilised hydrogen peroxide. Shell Internationale Research Maatschappij N.V. **866 764**
Thermoplastic polymeric compositions. Petrochemicals Ltd. **867 176**
Method of producing soluble nitration products of lignin. Udic S.A. **866 968**
Process for the production of α, β-unsaturated acids of the vitamin A series. Farbenfabriken Bayer AG. **867 179**
Bleaching compositions. United States Borax & Chemical Corp. [Addition to 863 288.] **867 067**
Terpolymers of vinylidene chloride vinyl chloride and higher alkyl acrylates. Grace & Co., W. R. **866 895**
Polymerisation method. Esso Research & Engineering Co. **866 971**
Piperazine derivatives. Wallace & Tierman Inc. **867 273**
Polymers containing disphonimide groupings and a process for the production thereof. Farbenfabriken Bayer AG. **867 006**
Process for the production of organo-tin compounds containing sulphur. Deutsche Advance Produktion GmbH. **867 070**
Production of polyolefins. Grace & Co., W. R. **867 139**
Process for the production of butadiene and isoprene. Shell Internationale Research Maatschappij N.V. **867 296**
Process for the manufacture of 6-chloro-7-sulphanyl 1-3:4-dihydro-1:2:3-benzo-thiadiazine-1:1-dioxide and its salts. Ciba Ltd. [Divided out of 847 064.] **867 073**
Acylated lactone adducts and polyesters. Union Carbide Corp. [Divided out of 839 645.] **867 111**
Manufacture of sulphonamides. Ciba Ltd. [Divided out of 866 785.] **866 786**
Preparation of titanium carbide from low-grade titanium ores. Union Carbide Corp. [Divided out of 867 204.] **867 205**

Open to public inspection 10 May

Platinum and fluorine containing catalysts and processes of hydrocarbon conversion employing said catalysts. British Petroleum Co. Ltd., Holmes, P. D., and Turner, R. **867 990**
Disubstituted nitrosamines, disubstituted ammonium nitrites and amine-nitric oxide addition compounds and a process for their preparation. Du Pont de Nemours & Co., E. I. **867 992**
Siloxane elastomers. Midland Silicones Ltd. [Addition to 764 246.] **867 511**
Synthetic diester lubricant compositions. Sinclair Refining Co. **867 543**
Amines. Geigy, AG, J. R. **867 918**
Preparation of elemental silicon. Du Pont de Nemours & Co., E. I. **867 871**
Manufacture of boron trichloride. Metal Chlorides Corporation. **867 523**
Dyestuffs of the anthraquinone series containing a halogenated triazine radical, their manufacture and use. Ciba Ltd. **867 571**
Preparation of hydantoic acid-formaldehyde resins. Armour & Co. **867 875**
Process for the manufacture of thiazoles. Leuna-Werke W. Ulbrich Veb. **867 857**
Hydantoic acid-formaldehyde-urea resins and their preparation. Armour & Co. **867 876**
Hydroxyl- and mercapto-alkanoyl-amino-carboxylic acid amines and process for their manufacture. Ciba Ltd. **867 572**
Vinylphenyl amino-carboxylic compounds and solid resinous polymers and resinous addition polymers derived therefrom and methods of making same. Dow Chemical Co. **867 528**
Curing catalyst for aminoplast resin compositions. Rohm & Haas Co. **867 806**
Processes for removing one gas from a mixture of gases. Pintsch Bamag AG. **867 574**
Aminoethyl-tetrahydrofurfuryl alcohol and its derivatives. Merck & Co., Inc. **867 575**
Anion-exchange resins and their preparation. Rohm & Haas Co. **867 477**
Dithio-phosphoric acid esters and pesticidal compositions comprising them. Murphy Chemical Co. Ltd. **867 780**
Preparation of weakly basic anion-exchange resins from chloro-hydrin esters of acrylic type acids. Rohm & Haas Co. **867 396**
Process for the production of thionophosphoric acid esters. Farbenfabriken Bayer AG. **867,534**
Steroid derivatives. Merck & Co. Inc. **867 786, 867 787**
Preparation of alkali metal 2, 3-dichloroisobutyrates. Rohm & Hass Co. **867 921**
Production of vitamin B_{12}. Uclaf. **867 537**
N-acyl derivatives of (3:5-diamino 2:4:6-triiodobenzoyl)-amino acids and X-ray contrast media containing same. Schering AG. **867 880**
Catalysts. Engelhard Hanovia Inc. **867 478**
Nuclear iodinated α:β bis-(aminophenyl)-propionic acids and X-ray contrast media comprising same. Schering AG. **867 538**
Lysine derivatives. Uclaf. **867 788**
Concentration of deuterium. Constructors J. Brown Ltd., and Roberts, N. W. **867 848**
Process for improving titanium dioxide pigments. British Titan Products Co. Ltd. **867 479**
Production of polymers. Monsanto Chemical Co. [Addition to 833 571.] **867 480, 867 481**
Cyanine dyes. Ilford Ltd. **867 403**
Manufacture of oil-soluble petroleum sulphonic acids. Lobitos Oilfields Ltd., Brown, T. F., and Mathews, P. **867 483**
High molecular weight polymers. Du Pont de Nemours & Co., E. I. **867 882**
Bonding metals to synthetic resins. Formica International Ltd. **867 682**
Recovery of sulphur from hydrogen sulphide containing gases. Gas Council. **867 853**
Production of vanadium pentoxide. Union Carbide Corporation. **867 484**
Useful siloxane compositions. Imperial Chemical Industries Ltd. **867 485**
Anthraquinone dyestuffs and process for their manufacture. Ciba Ltd. **867 791**
Process for forming laminates. Polymer Corporation. **867 792**
Aromatic polysulphonamide solutions. Imperial Chemical Industries Ltd. **867 486**
Reaction of silicon-nitrogen containing compounds. Richardson Co. **867 487**
Cross-linkable polymer compositions. Du Pont de Nemours & Co., E. I. **868 001**
Hydrocarbon conversion process. Texaco Development Corporation. **867 823**
Phosphoric acid esters. Farbenfabriken Bayer, AG. **867 794**
N-(2, 2-dialkoxy-ethyl)-N-[(substituted-phenyl) alkyl] dihaloacetamides. Sterling Drug Inc. [Addition to 770 928.] **867 743**
(Bis (1-alkyl-1-carboxyl-1-hydroxymethyl) phosphoric acid and method of producing same. American Cyanamid Co. **867 883**
Liquid-fuel compositions. Du Pont de Nemours & Co., E. I. **867 884**
Production of hydroperoxy-ethyl-substituted pyridines. Distillers Co. Ltd. **867 488**
2:3:6-triacyloxybenzoic acids and derivatives thereof and methods of making them. Kreuchunas, A. **867 491**
Process for the manufacture of unsaturated aliphatic nitriles. Standard Oil Co. **867 438**
Process for the manufacture of prednisalone-acetate. Farbwerke Hoechst AG. **867 887**
Thio phosphate esters. American Cyanamid Co. **867 441**
Removal of water from resinous compositions. Union Carbide Corporation. **867 442**
Production of acetyl pyridines. Distillers Co. Ltd. **867 489, 867 490**
Platinum and fluorine containing catalysts and processes of hydrocarbon conversion employing said catalysts. British Petroleum Co. Ltd., Holmes, P. D., and Turner, R. [Divided out of 867 990.] **867 991**
Reduction of dextrose. Engelhard Industries Inc. **867 689**
Blends of synthetic polybutadiene and natural rubber. Phillips Petroleum Co. **867 390**
Synthetic resins having anion-exchange properties. Farbenfabriken Bayer AG. **867 449**
Organosilicic derivatives and processes for the preparation thereof. Soc. Des Usines Chimiques Rhone-Poulenc. **867 748**
Production of alkylene oxide polymers. Petrochemicals Ltd. [Addition to 785 229.] **867 452**
Process for the chloromethylation of aromatic vinyl polymers. Farbenfabriken Bayer AG. **867 769**
Organo-siloxane elastomer foams. Midland Silicones Ltd. [Addition to 798 669.] **867 619**
Process for the hydrogenation of unsaturated fatty acids. Unilever Ltd. **867 751**
Sulphonic acid hydrazides and a process for the manufacture thereof. Hoffman-La Roche & Co., AG., F. **867 985**
Derivatives of bicyclokeptadiene. Velsicol Chemical Corporation. **867 770**
Treatment of mineral materials for use as fillers for organic materials. Georgia Kaolin Co. **867 752**
Stabilisation of hydrogen peroxide. Columbia-Southern Chemical Corporation. **867 460**
Production of 11-bromo-undecanoic acid. Distillers Co. Ltd. **867 549**
Octanoic esters and process for their preparation and utilisation. Joullie, M., Laurre, M., Maillard, G., and Muller, P. **867 462**
Preparation of oxygenated compounds. Esso Research & Engineering Co. [Addition to 761 024.] **867 799**

DIARY DATES

MONDAY 10 APRIL
S.C.I.—London: 14 Belgrave Sq., S.W.1, 5.30 p.m. A.g.m. of Surface Activity Group & 'The colloidal stability of polymer emulsions', by Dr. E. G. Cockbain.
S.C.I—London: Imperial Coll. of Sc. & Tech., Prince Consort Rd., S.W.7. 5-day symposium 'First international congress on metallic corrosion'.
S C I.—Leeds: Univ. of Leeds. 2-day symposium 'Drugs from dyestuffs' & 'Newer methods of purification'.

TUESDAY 11 APRIL
Plast. Instit.—London: Wellcome Bldg., Euston Rd., N.W.1, 6.30 p.m. 'Some recent developments in reinforced plastics', by T. P. R. Lart.
S.C.I. & I.Chem.E.—London: 14 Belgrave Sq., S.W.1, 6 p.m. 'A systematic classification of chemical processes & equipment'.
S.C.I.—Birmingham: Chem. Depart., Univ. of Birmingham, Birmingham, 15, 2.30 p.m. 'Laboratory architecture', by B. R. Williams. 6 p.m., Annual business meeting.
S.C.I.—Houldsworth: School of Applied Sc., 9.30 a.m. 'Newer methods of purification of organic chemicals'.

WEDNESDAY 12 APRIL
I.Chem.E.—Birmingham: Univ. of Birmingham, Edgbaston, Birmingham, 15, 9.30 a.m.-5.30 p.m. Symposium 'New metals & alloys as materials of construction' & new non-metallic materials of construction'.
I.Chem.E.—Birmingham: Chem. Eng. Dep., The University, Edgbaston, Birmingham, 15. 'Materials of construction'.
S.A.C., O.C.C.A.—London: Wellcome Bldg., Euston Rd., N.W.1, 7 p.m. 'Some problems in the analysis of surface coating materials', by C. Whalley; 'The examination of mixed solvents obtained from plastic adhesives, lacquers & surface coating preparations', by J. Haslem, A. R. Jeffs & H. A. Willis; & 'The identification & estimation of pigments in pigmented compositions by reflectance spectrophotometry', by D. R. Duncan.

THURSDAY 13 APRIL
F.S.—3-day visit to fertiliser factories in Holland.
S.C.I.—London: I.C.I. House, Millbank, S.W.1, 6.15 p.m. Agricultural film evening.

TRADE NOTES

Luwa Plant in U.K.

Luwa (UK) Ltd., a U.K. subsidiary of Luwa A.G., Zurich, Switzerland, have started business at Reliance House, 340 Clapham Road, London S.W.9 (Macaulay 7776) as suppliers of plant in the U.K. based on the Luwa thin film evaporating machine and the Luwa rotary high vacuum fractionator. A newly-developed Luwa fractionator column was featured in CHEMICAL AGE, 1 April, p. 548.

New Telephone Numbers

Telephone number of Kabi (Electrical and Plastics) Ltd., Cranborne Road, Potters Bar, Middlesex, has been changed to Potters Bar 53444. Callers from London should dial PR followed by the five figure number.

The telephone number of the Scottish Division of United Glass Ltd. has been changed to Bridge of Allan 3031.

Squirrel Cage Motors

The Engineering Group of The General Electric Co. Ltd., has recently revised Technical Description No. 277 which deals with high torque, high slip and high reactance squirrel cage motors. Copies are available from the company's offices at Erith, Kent.

Metal Pretreatments Products

Two new products marketed by Metal Pretreatments Ltd., 240 Clapham Road, London S.W.9, are Dri-a-Dex, a mineral compound claimed to provide a safe, non-slip surface for oily floors, and Wat-a-Flo additive for water-wash spray booths. Dri-a-Dex is said to be capable of absorbing many times more than its own volume of oil, grease and other liquids. It will also soak up contamination from concrete and so acts as a cleaner as well. Wat-a-Flo, added to the water reservoir in water-wash spray booths is claimed to destroy paint residues and to ensure a complete water curtain at the back of the booth, by preventing paint mediums settling and breaking the curtain.

Plastics Laboratory Ware

Plastics laboratory ware in polythene, polypropylene, p.v.c., p.t.f.e., acrylics and polystyrene is described and illustrated in a new catalogue published by X-Lon Products Ltd., 48 Gillingham Street, London S.W.1. The range includes bottles, carboys and other containers; weighing and dispensing bottles; brushes; funnels; jugs, bowls and buckets; graduated measures; pipette washing equipment; stirring devices; and a variety of miscellaneous laboratory and industrial equipment.

Use of Na and K Arsenites in Agriculture

All previous recommendations concerning sodium and potassium arsenite in agriculture have been superseded by the latest announcement of the Ministry of Agriculture, Fisheries and Food which states that sodium and potassium arsenites should not be used in agriculture as potato haulm destroyers and weedkillers.

Endothal Recommended for Safe Use

Endothal, 7-oxabicyclo (2,2,1) heptane-2, 3-dicarboxylic acid, is recommended for safe use on non-edible crops in the U.K. It should continue to be specified under the Agricultural (Poisonous Substances) Regulations as a Second Schedule Part II substance.

Market Reports

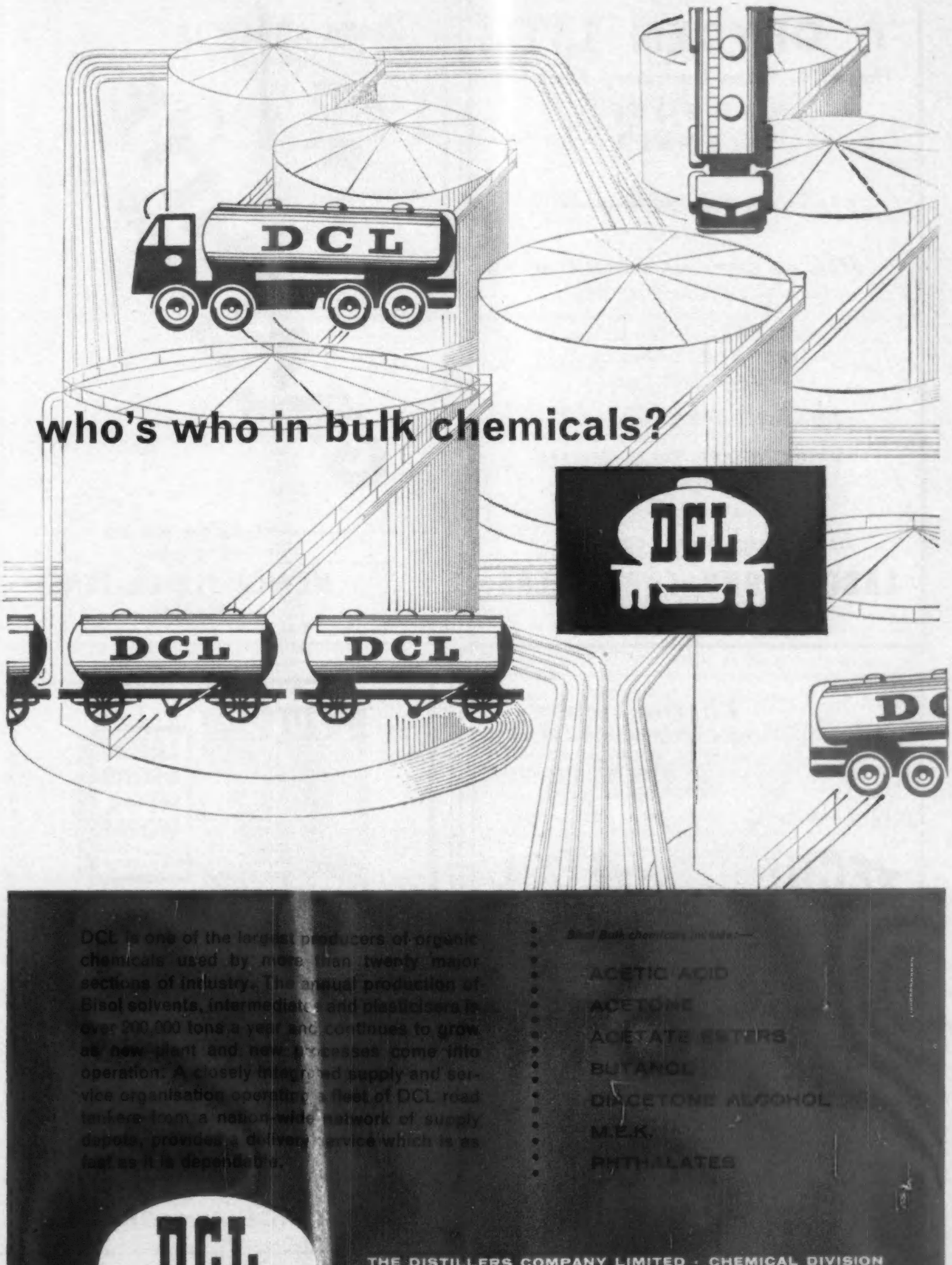
COAL TAR PRODUCTS MARKET STEADY

LONDON The movement to the home consuming industry under contracts has been restricted by the Easter holiday break, and the shorter working week has likewise resulted in quieter trading conditions, but active markets are looked for during the coming week. A good export enquiry has been reported covering a wider range of chemicals and allied products much of which is expected to find its way to the order books. Prices generally are steady. The seasonal pressure for fertiliser materials is now developing.

There has again been no alteration in conditions in the coal tar products market.

MANCHESTER Traders on the Manchester market for general chemicals are looking forward with confidence to a steady flow of business in both the home and overseas sections during the current quarter. Meanwhile, business is still somewhat under the influence of the holidays and though the movement of supplies under contracts has been steadily resumed fresh bookings have been quiet. These, however, are expected to pick up during the next few days. In the fertilisers section there is pressure for deliveries of the compounds, superphosphates and most of the nitrogenous descriptions.

SCOTLAND In the Scottish heavy chemical market the movement of industrial chemicals has been much quieter during the past week. Buying has been confined in most instances to the usual day to day range, with quantities remaining steady. Against this there has been a good volume of enquiries for the overseas market with a reasonable amount of resultant business. There is little change in regard to agricultural chemicals, with a much brisker market due to seasonal demands.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BOX NUMBERS: *Reply c/o "Chemical Age" · Bouverie House · Fleet Street EC4.*

SITUATIONS VACANT: continued

L I L

PACKAGING ADVISER

LAPORTE CHEMICALS LIMITED, LUTON (*a member of the Laporte Group of Companies*) invite applications for the new post of Packaging Adviser.

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